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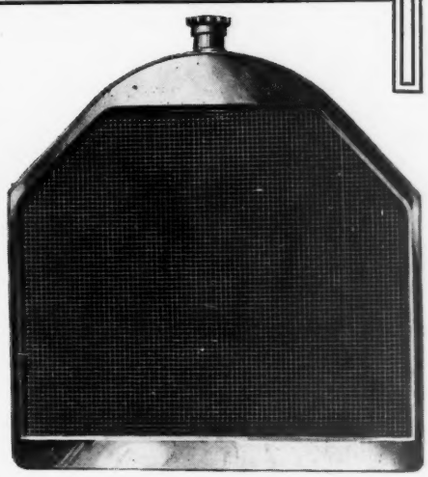
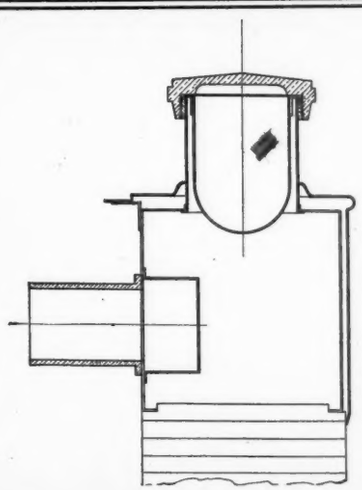
MOTOR AGE

VOLUME XXII CHICAGO, JULY 25, 1912 NUMBER 4

McCord Radiators





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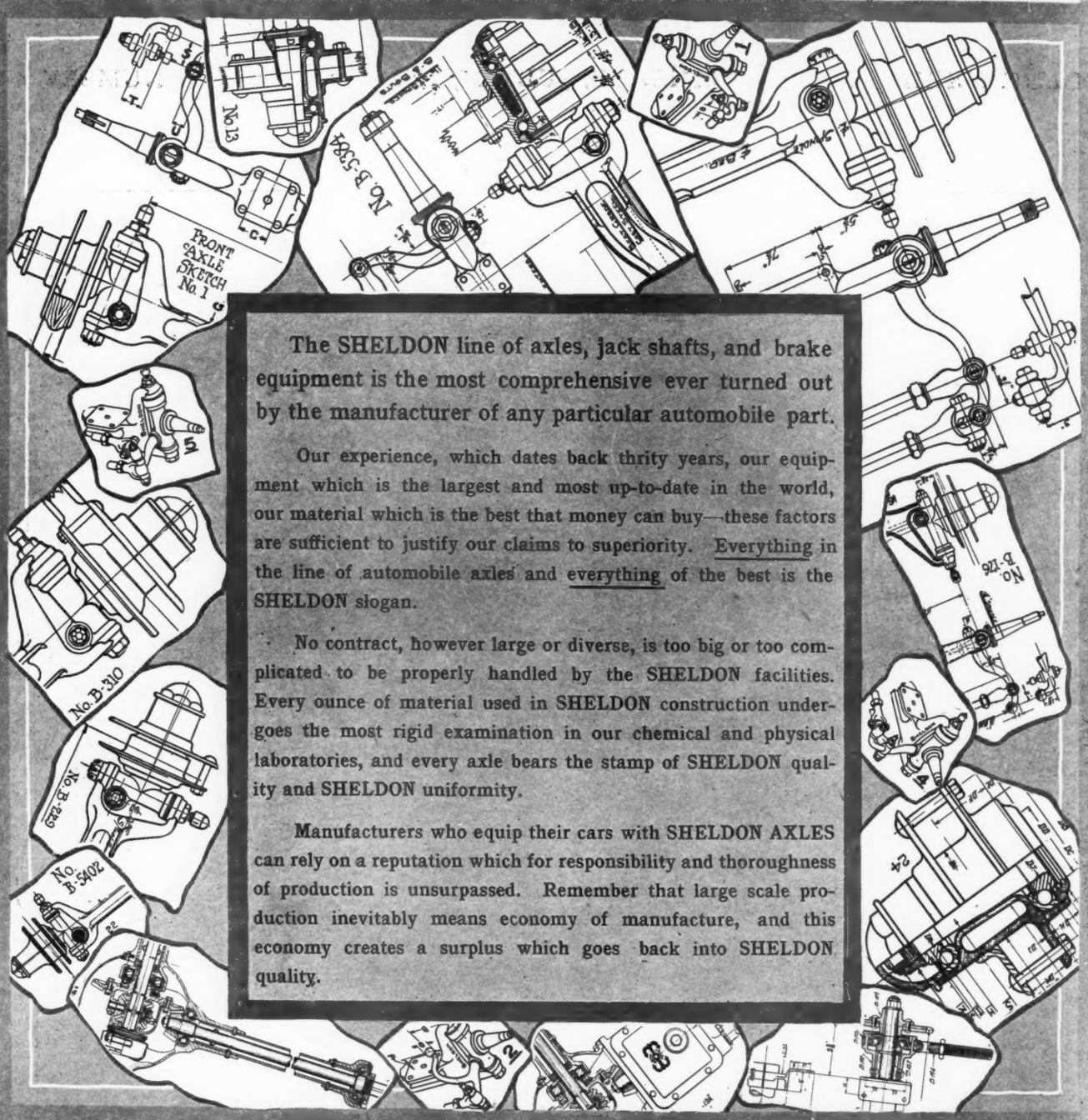

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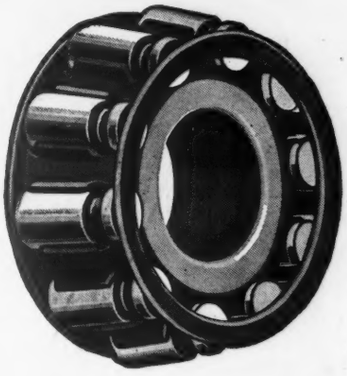

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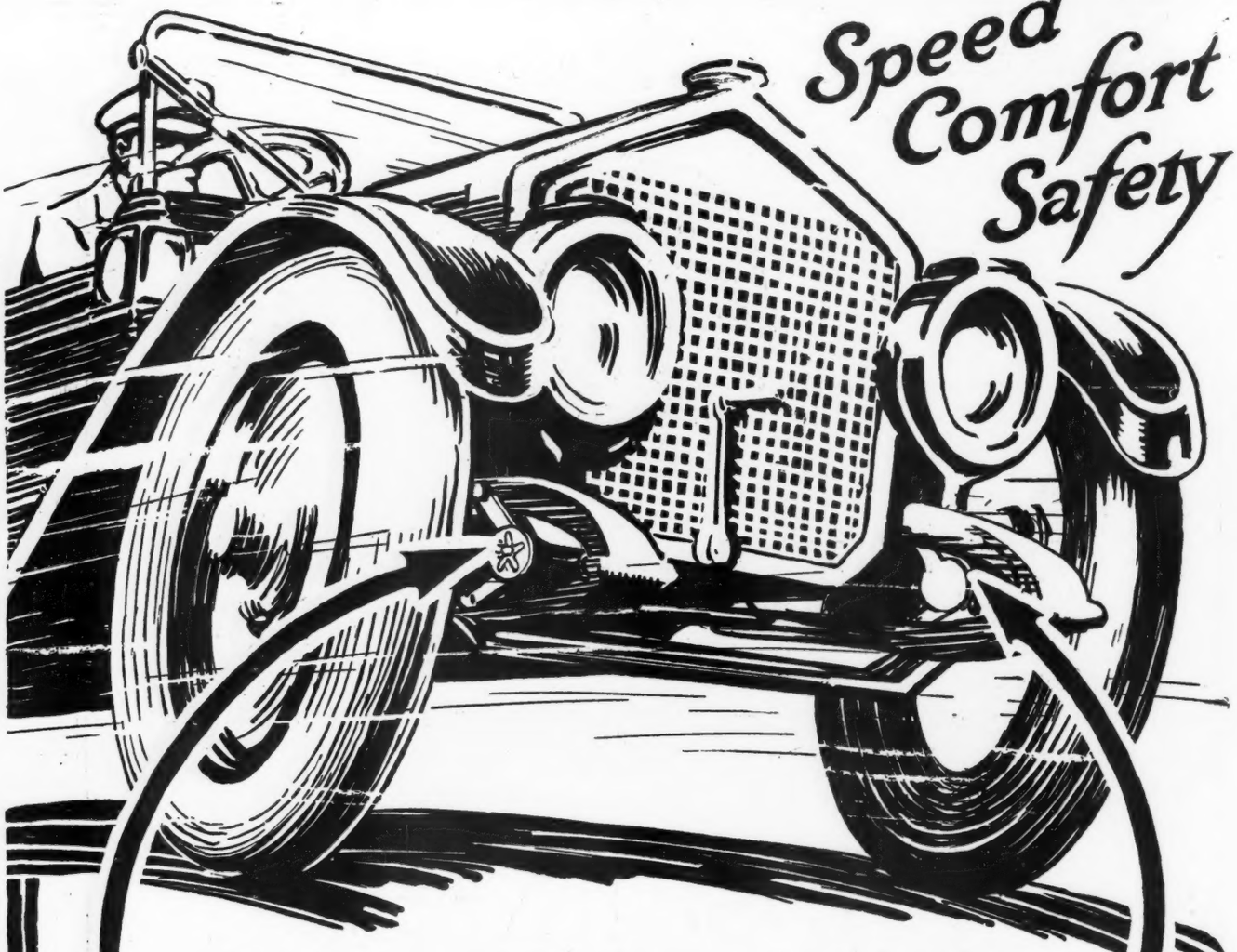

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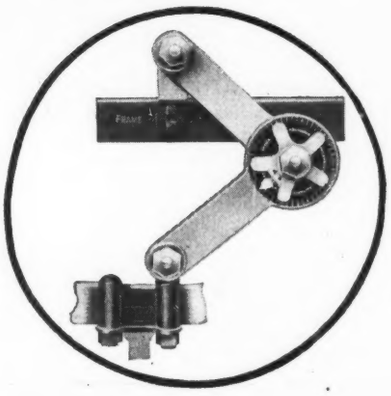

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MOTOR AGE

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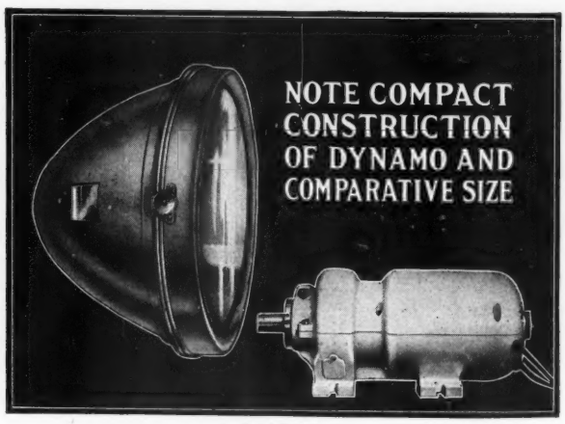

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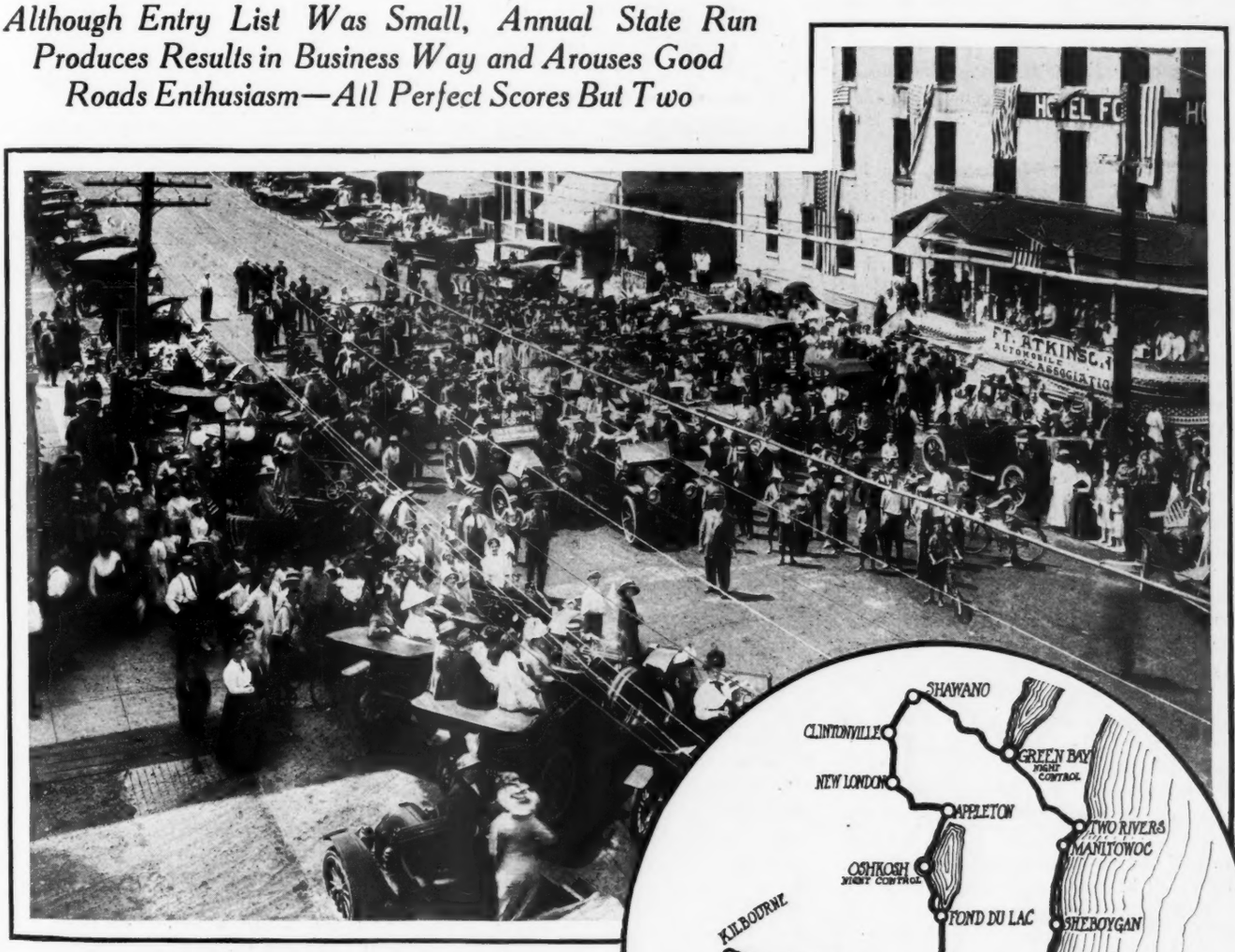
VOL. XXII, No. 4 CHICAGO, JULY 25, 1912 $3.00 PER YEAR

MOTOR AGE

Badger Tour Stimulates Motor Trade

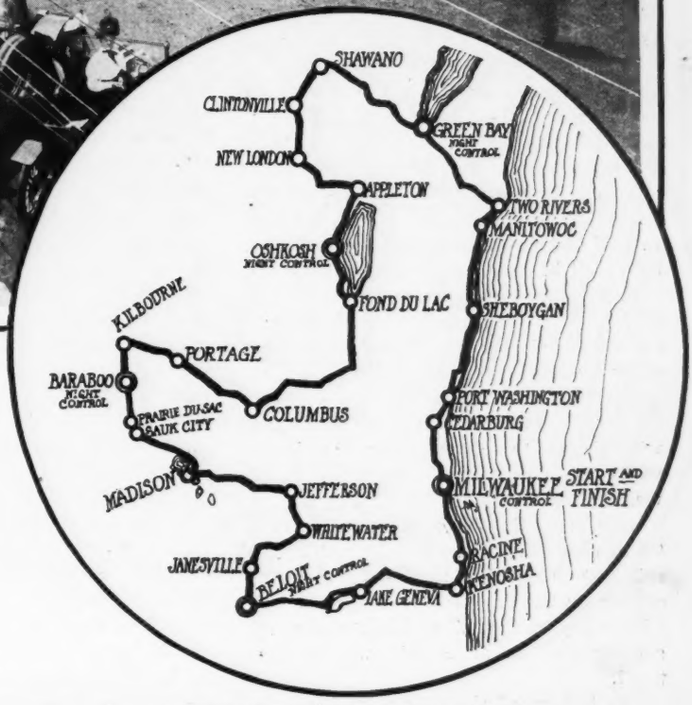
Although Entry List Was Small, Annual State Run Produces Results in Business Way and Arouses Good Roads Enthusiasm—All Perfect Scores But Two



NOON CONTROL AT FORT ATKINSON, WIS

By L. E. Meyer

MILWAUKEE, Wis., July 22—Lack of interest which might almost be called antipathy, on the part of the motor car dealers in Milwaukee with regard to the third annual Wisconsin reliability tour of the Wisconsin State Automobile Association, which was run from July 15 to 19 inclusive, has probably ended the efforts of the state organization of motorists to promote endurance or reliability runs in the interest of the tradesmen. Yet in spite of the lack of interest, which resulted in a small entry list, the 1912 tour is regarded by the participating dealers as one of the best business promotion stunts they ever have experienced, and satisfaction is expressed all along the line. The twelve dis-



WISCONSIN STATE TOUR ROUTE

tinct makes of cars which covered the tour have made many new acquaintances among dealers and prospective buyers, and they have injected new enthusiasm into present owners, the three forces being important vertebrae in the backbone of the motor industry.

Nearly All Perfect

Ten out of twelve starters in the competition for the sweepstakes trophy, the Milwaukee Sentinel cup, finished with perfect scores; one carried a demerit of 39 points for a minor repair, while the other was withdrawn because of trouble which while not serious, would have loaded a heavy penalty on the car because of the point per minute demerit rule for work on the road. Both contenders for the Emil Schandein cup, for private owners, finished with clean slates. The rules governing both classes were the same, being grade 3 regulations, A. A. A., with additions by the W. S. A. A. to meet local conditions.

With so many perfect scores, the list of winners is a large one and there are enough honors to go all around. Under the deeds of gift of the trophies, the cups will not be awarded to any one car, but each will be granted gold medals and certificates, which will attest that it completed the tour without demerit. It was expected at the start that there would be a large number of perfect scores, for the route demanded an average run of 120 miles for 5 days under a schedule of approximately 12 miles per hour.

The penalty of 39 points on No. 3 King was imposed for work on the water manifold. Driver Hannemann had difficulty in keeping water in his radiator and on investigation found that the packing had slipped out of place. He consumed 39 minutes in making a repair that he was sure would last.

Troubles En Route

The Flanders roadster was forced to drop out at Shawano, Wis., on the fourth day because of bearing trouble in the differential. Its team-mate, a Flanders touring car, came through with a clean score, although its passenger load weighed 665 pounds. The roadster was driven by Tom R. Bell and the touring car by W. Soules, both well known as reliability tour pilots.

Two Indian motor cycles, one ridden by C. A. Carpenter, manager of the Wisconsin Motorcycle Co., of Milwaukee, and the other by Al Trupke, an assistant, accompanied the tour throughout its distance. On rough roads the two-wheeled cars were obliged to go slow, but on the boulevards the motor cars were at a disadvantage.

Only once did the tourists strike rain. On leaving Oshkosh on July 18, a drizzling rain set in, which turned to a heavy shower by the time Appleton was reached. Five miles west of Appleton the sun was shining and no more rain was encountered.

The 5 days of the tour were ideal for touring. While roads were generally dusty, the cool breezes made up for the disadvantages of dust and coats were always comfortable.

SAMPLE OF NATURAL HIGHWAY NEAR PORT WASHINGTON

RESULTS IN ANNUAL WISCONSIN STATE TOUR

MILWAUKEE SENTINEL TROPHY

No.	Car	Model	Passengers	Driver	Road Penalties July 15	July 16	July 17	July 18	July 19	Total
1	Buick	40	5	Emil Hokanson	0	0	0	0	0	0
2	Case	5	5	Jake Hanson	0	0	0	0	0	0
3	King	36	2	H. M. Hanneman	0	0	39	0	0	39
4	Krit	KR	2	James Holmes	0	0	0	0	0	0
5	Hupmobile	32 H	2	Jay E. Morehouse	0	0	0	0	0	0
6	Ford	T	2	W. H. Diener	0	0	0	0	0	0
7	Flanders 20	S	2	Thomas R. Bell	0	0	0	1000	* 1000	
8	Flanders 20	S	5	W. H. Soules	0	0	0	0	0	0
9	Oakland	30	5	C. F. Spooner	0	0	0	0	0	0
10	Paige	Brookland	2	R. D. Rockstead	0	0	0	0	0	0
11	Marion	37	5	H. R. Gallun	0	0	0	0	0	0
12	White	30	2	Rich. Weber	.	..	.	.	.	.

SCHANDEIN TROPHY

21	White	GAD	5	H. O. Stenzel	0	0	0	0	0	0
22	Franklin	D	5	J. D. Babcock	0	0	0	0	0	0

*Withdrawn

That Wisconsin is the "Playground of the Middle West" was amply proven by the beautiful scenery along the route. The course of the run took the party down the shore of Lake Michigan, westward through the Fox river country, then to the Rock river valley and into the valley of the Wisconsin river, at the point where the famous Dells are situated. From the Wisconsin, the cars swung over to Lake Winnebago and the Fox river which runs into Green bay. The last lap was along the shore of Lake Michigan, the water being in sight continuously.

The Rambler Cross-Country car, provided for Motor Age and other press representatives by Alfred Reeke, manager of the Milwaukee branch of the Thomas E. Jeffery Co., made a perfect score, and will be awarded a diploma by the W. S. A. A. Frank Roesler, who drove the car, has driven in every reliability tour in Wisconsin, including the 1908 tour conducted by the old Milwaukee Automobile Trade Association. He also drove the pathfinder cars for the 1908 and 1910 Wisconsin tours.

Contest Rules Easy

The 1912 tour was hardly a contest. If grade 1 rules had again governed the run, as in the last 2 years, it is doubtful if there would have been more than two or three perfect scores. The last day's run alone brought no fewer than five cars in Milwaukee with broken spring leaves, which, however, did not cause penalties because no work was done on the springs on the road.

The competitive feature having been a minor matter, the purpose of the tour was business. But no tour with such a purpose could possibly hope to induce the interest without the competitive feature, for people nowadays know motor cars when they see them and they will not walk a few steps to look at an outside car unless it is decorated with a contestant's number, a bunch of pennants

and banners, and contains a party of tourist-appearing men. Then there is the fact that so well-known an organization as the Wisconsin State A. A., a private owners' society, with the prestige of having conducted two successful tours, is conducting the event. Its members, now numbering 3,000 or more, did yeoman service in their respective communities by boosting for several weeks before the cars came through.

Advantages of the Tour

The principal argument used by the executive committee of the W. S. A. A., when it sought entries, was that it had laid out regulations which would permit of demonstrations in the various towns and cities; conferences with dealers during the short stops between controls, and time to book orders in case an enthusiast was ripe for this important proceeding. It can be said that while the association made good on its promises, the contestants did not nearly take advantage of the opportunities afforded. A careful watch of the contestants during the 5 days revealed the fact that only 50 per cent of them cared to take advantage of the possibilities. Talks with the other half indicate that they did just as much promotion work as they intended to at the start, so everybody seems satisfied. The opportunity was there; if a dealer did not take advantage of it, the fault was entirely his own.

R. D. Rockstead, of Milwaukee, state agent for the little Paige car, furnishes an example of a contestant who utilized the opportunity for business to the full measure. He spent every minute of the scheduled stops in talking business and when necessary he cut his running time by extending his stay. The result was that he contracted for nearly fifty Paige cars with new dealers and individuals. In the city of Whitewater he took 15 minutes overtime to telephone to his Milwaukee house to run two Paige cars for immediate delivery to individual buyers in that city.

The make-up of the list of contestants was peculiar to the Wisconsin tours. There were in the professional class seven dealers from Milwaukee; three from Madison, Wis., the state capital; one from Oshkosh, and one from Racine. The Racine entry was direct from the Case factory, which furnished the pathfinder earlier in the year, and the pacemaker's car in the tour. All of the Milwaukee contestants are state agents for the cars they entered. They are: Hustis Brothers, King; Bates-Odenbrett Auto Co., White and Krit; Hickman-Lauson-Diener Co., Ford; W. E. Allen Co., Marion; Jay E. Morehouse, Hupmobile, and R. D. Rockstead, Paige. Two of the Madison entrants are district agents in a large central and western Wisconsin territory, the Hokanson Automobile Co. for the Buick, and Frank Statz, Flanders. The same is true of the Oshkosh contestant, the Thom Automobile Co., Flanders. The Spooner-McConnell Auto Co. of Madison, which put through an Oakland is also a large district agent.

In Private Owners' Class

The two contestants in the private owners' class are men in the accessory business at Milwaukee, and after all is said and done, it would seem that they realized the largest returns on their investment in the tour. J. D. Babcock, who drove his Franklin D, is secretary and treasurer of the Auto Supply Co. and Auto Starter Co. of Milwaukee. H. O. Stenzel, who tied Mr. Babcock with his White, is president of the Milwaukee Tire and Supply Co., state agent for Republic tires and dealing in other specialties and accessories.

The tour was eminently successful as a business proposition. An instance of the resultant good is found in the following expression by W. E. Allen, president of the company which has the state agency for the Marion:

A NOON CONTROL AT CLINTONVILLE, WIS.

"We took the state agency for the Marion only 5 months ago, and we entered this tour because we saw an excellent opportunity to get acquainted not only with the trade, but with individual prospects. The Marion always has been well and favorably known in Wisconsin, but the W. E. Allen Co. was up to the time of the tour little known as a motor car selling concern among a large majority of dealers and buyers outside of the immediate vicinity of Milwaukee. I feel that we have accomplished our purpose in making ourselves and our car widely known, and the Wisconsin State A. A. has our thanks for the opportunity it presented."

Big Cars Participate

It requires considerable nerve to pit cars averaging $2,000 against cars of the $900 or $1,000 class in a run of the class of the 1912 Wisconsin reliability, where the element of luck, or whatever it may be called, is so strong. But the Case company and the Bates-Odenbrett agency took the chance and made good. Had either the Case or the White been obliged to make even a minor road repair, their reputations would have suffered much more seriously than if the same thing had happened to a smaller car.

Observation of the tour brought out the fact that dealers in all of the towns and cities visited took a much deeper interest in the run than during the first 2 years. They were more solicitous of the welfare of drivers and members of parties than before, and they joined with local members of the W. S. A. A. in providing a royal welcome.

Despite the lack of real novelty, it can be said in all truth that the third tour aroused more interest than the first two. It is figured 85 per cent of the communities touched by the 1912 tour were touched by either the 1910 or 1911 run, and judging from the turnouts in these places this year as compared with the two previous occasions, interest, instead of waning, has increased. This is true both of tradesmen and public. It is still an honor for a city to be chosen for a 5-minute stop, and it was fine to see how the little cities extended themselves to make the tourists feel at home.

In line with the policy of making the tour valuable from a business standpoint, the officials decided at the start to require all cars to make certain specified stops under penalty. In past years stops were the exception rather than the rule. On the second day's run, for instance, thirteen stops of 5 and 10 minutes were made. Nine of these stops were made before the noon control was reached. There hardly was any reason to dine that noon, for appetites were well appeased by taking on refreshments nine times in the morning. At each stop, every member of the party was obliged to take a sandwich, some lemonade, coffee or malt-and-hop product, and a cigar. The prettiest girls of the town did

the honors; there could be no refusal. A few of the contestants did elaborate advertising by means of souvenirs, pennants or other novelties. The Marion distributed several thousand mirrors; the Case distributed 5,000 stickpins of the famous Case eagle; the Paige pinned 1,500 small pennants on as many people. The Milwaukee Sentinel, donor of the sweepstakes prize, distributed 5,000 small pennants and 1,000 large pennants bearing the words, "Milwaukee Sentinel Trophy Tour 1912." The Rambler people, who furnished the press car, gave away 5,000 neat badges of brass and enamel. In three tours the Kenosha firm has distributed 15,000 of these pins.

Everyone Interested

It was hardly necessary for the contesting dealers to do any amount of preliminary work to get dealers and prospects into the cities where stops were made. The tour always receives wide publicity in the daily and weekly press, although the state association never has made a systematic campaign in this direction, and dealers as well as townspeople were on hand to see the cars. The state dealers appeared to be a wide-awake set, and through various and divers mediums were almost as well informed as to the progress and incidents of the tour as the contestants themselves.

The hotel lobbies were busy places at night. Every available nook and corner was filled by some party or other, consisting of a contestant, his local dealer and a few prospective buyers. It is said that any number of sales were clinched by the presence of the state agent, who made the closing argument.

There practically was no demonstration of cars in any city. As soon as the contestants reached the night control, the cars were parked in the official paddock and the drivers and mechanics did their 45 minutes of work allowed by the rules. Tarpaulins and canvas covers were not put in place until dark, however, so that spectators could have an opportunity of looking over the cars. At noon the cars were parked in a bunch and looked over by the crowds while dinner was being taken. No one seemed to care to make demonstrations, particularly at night when drivers and passengers were worn out.

The Daily Routine

The daily log of the 1912 tour differs little from the previous ones. The daily run, to be sure, averaged considerably less than in 1910 and 1911, being reduced from 160 to 120 miles per day, but this did not make the run actually easier, for the contestants whirled through the country in the same old speedy way and reached night controls anywhere from 2 to 4 o'clock, when the due time was 6 p. m. On the first day, with a 112.9 mile run, the first contestants arrived at Beloit at 1:55 o'clock.

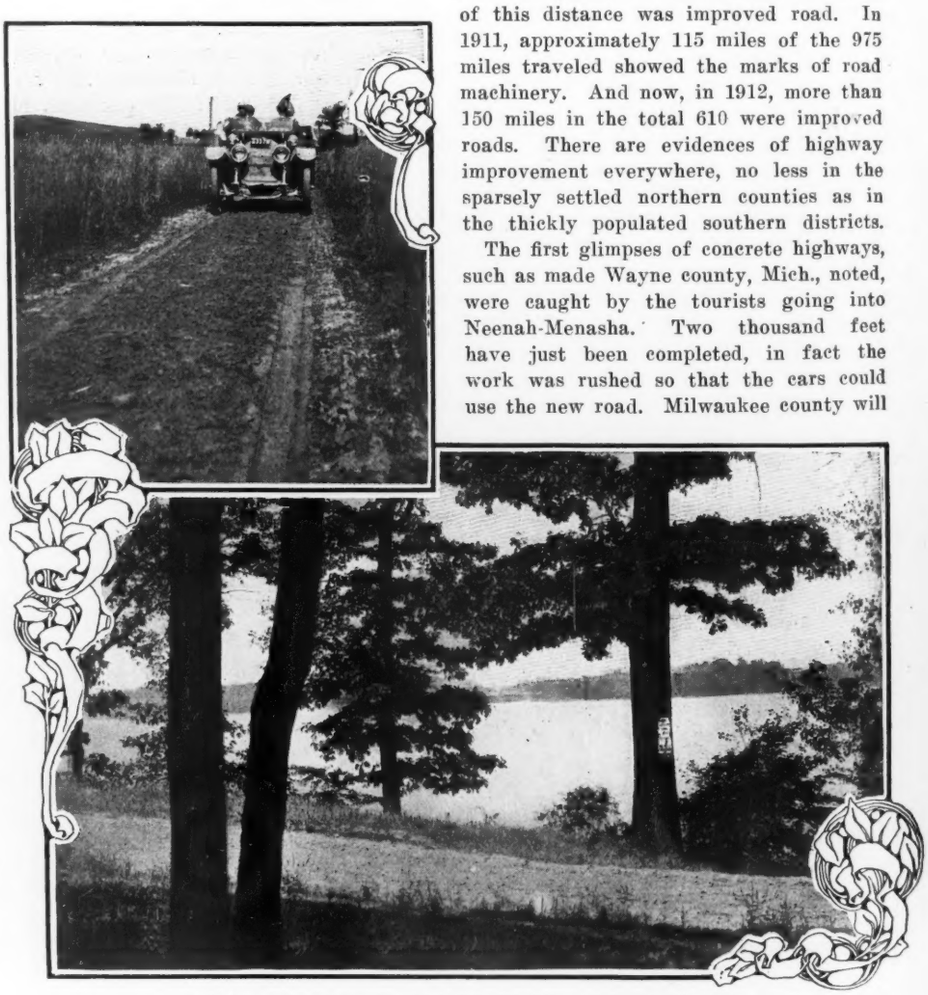
The pilot car left with its load of confetti 1 hour before the contestants, or 7 o'clock. At 7:30 a. m., the pacemaker drew up and was sent away. At this hour, too, every driver and observer was obliged to be at the paddock. From 7:30 until 8 o'clock the cars were brought out and strung in a line from starting mark in the numerical order. At the stroke of 8, No. 1 was sent away and every minute the next car followed. The day's stops were noted on observers' cards, with instructions that the specified stop must be made or penalties would be imposed. On arriving in the town, the car was stopped in the center of the principal square, to be immediately surrounded by the crowds, through which the reception and refreshment committees forced their way to hand out welcome and eatables. These stops were from 5 to 10 minutes in duration, according to the size of the city. An exception was made at Fort Atkinson, Wis., the home of former Governor William Hoard, famous dairyman and probably the premier good roads' enthusiast in Wisconsin. Here the entire tour was assembled at one time and 20 minutes were spent. Governor Hoard made a stirring address on good roads, his statements previously having been proven when the contestants ran over several miles of the finest roads in the middle west, built under the direction of the governor's son, A. R. Hoard, former county highway commissioner. The Fort Atkinson Automobile Association, member of the W. S. A. A., lined up 126 cars on the main street and every one of them blew its signal or signals for 5 minutes. The club, by the way, gained fifteen new members on the strength of the reception, which was not excelled anywhere on the entire trip.

At Clintonville the party witnessed sensational work by the product of the Four Wheel Drive Auto Co. of that city. Every member was taken to a mountain of natural sand at the outskirts of the city, where a stripped chassis ploughed right and left, forward and backward and every way but upward through anywhere from 1 to 3 feet of deep sand. The 3-ton car, which won the honors in the army test from Dubuque, Ia., to Sparta, Wis., gave an exhibition of its strength and ability. The tourists were invited to take any of their cars to duplicate the feat for $100, but the only one who tried was stalled in a few moments.

Good Roads Enthusiasm

One of the most striking facts brought out by the tour is the good roads enthusiasm. The participation by the state in highway construction by act of legislature, 1911, is given credit for bringing this enthusiasm to the noble pitch of the present. In 1910 the state tour covered 850 miles, and not more than 75 miles of this distance was improved road. In 1911, approximately 115 miles of the 975 miles traveled showed the marks of road machinery. And now, in 1912, more than 150 miles in the total 610 were improved roads. There are evidences of highway improvement everywhere, no less in the sparsely settled northern counties as in the thickly populated southern districts.

The first glimpses of concrete highways, such as made Wayne county, Mich., noted, were caught by the tourists going into Neenah-Menasha. Two thousand feet have just been completed, in fact the work was rushed so that the cars could use the new road. Milwaukee county will



NEAR BARABOO—CRAWFORD RIVER AT JEFFERSON

build 15 miles of this road this year and all prejudice has been swept away by the excellence of the Neenah-Menasha stretch.

One of the finest pieces of improved road encountered on the whole trip was that on a hill 1½ miles long, between Sauk City and Prairie du Sac, and Baraboo. The hill is composed of solid granite, covered with sand, and Sauk county has virtually paved the entire hill with crushed granite so that the grade was never believed to be as hard as it actually is. The sand road has been entirely covered with a layer of granite, smooth and firm.

Fine Highways Encountered

The entrances chosen into almost every city gave the tourists joy. Macadam is the popular material, and in approaching a town over stony roads, or sand, or corduroy, the sudden change to smooth riding actually forced the tourists to shout in glee. Several stretches of demonstration road built by the state highway commission for the benefit of county boards were passed over. Some of these roads have been down 3 years and are better today than a year ago, despite heavy motor traffic.

The worst stretch of road on the tour was one of 19.3 miles from Kilbourn to Portage. The cars were obliged to plough through a foot of sand, climb hills in it and make bad curves through it, and it was marveled that a car could stand the racket. Two cars were met on this stretch which had burned out their clutch linings, and the tourists expressed sympathy and beat it onward.

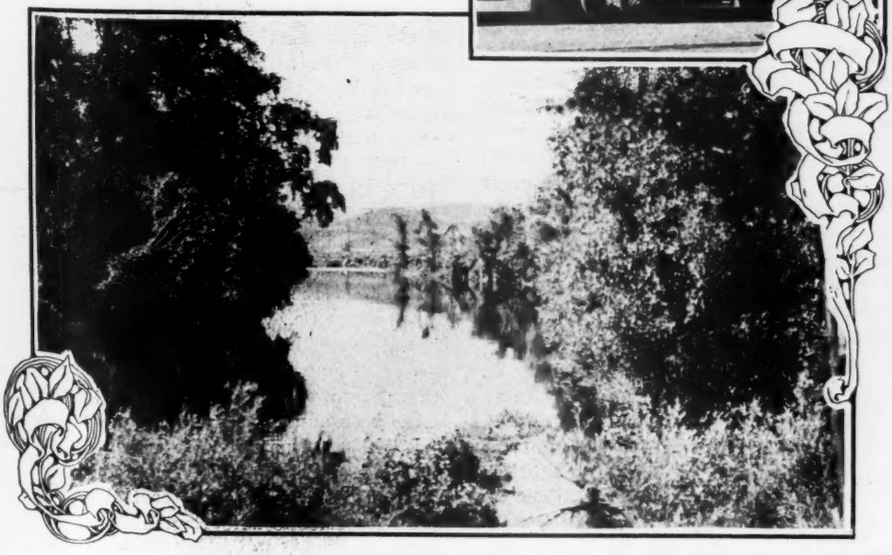
In the vicinity of Shawano, in the wild and wooly north, the tourists were sent over several miles of corduroy road, where springs were given their best work to do. The logs had been swept almost bare by heavy rains earlier in the summer. In this part of the country culverts consist of two logs or a couple of 4-inch planks laid on logs. Nearly half of the cars showed broken spring leaves as the result of the journey over the bumps. A railroad track would have been a boulevard compared with this.

The tour made any number of detours to pass points where road and culvert construction was going on. Leaving Fond du Lac, to Oshkosh, it was necessary to make 3 miles additional on account of the construction of a mile of concrete road. This type of road is new to Wisconsin, but estimates are that about 50 miles will be built in Wisconsin this year.

The last day's run, Green Bay to Milwaukee, was made over the lake shore road, which for many miles consists of two wheel tracks and grass. It is sandy and little used but is bound to become popular for tourists when improved. The center of the road tested the clearance of cars, and the sod pans were bright and shiny after being whisked by tall grass for miles.

Near Fort Atkinson

The entrance to Fort Atkinson is a road built of a composition of tailings from the lead and zinc mines of southwestern Wisconsin and screenings of lime and sand stone. The mine residue is being extensively used in Minnesota, and Wisconsin cities are just waking up to its possibilities for road building. The cost of transportation stands in the way of wide use.



AT BELOIT HOTEL—A WISCONSIN RIVER

Farmers are still working out their poll tax by putting in 1 day on the road, evidences thereof being seen frequently. It appears to be the practice to take a spade and throw sod and loose dirt from the side of the road to the roadway. It was the unanimous opinion that the $2 poll tax would at least do some good if paid to the county by the farmer instead of working it out.

Criticism of road conditions were taken in good spirit by farmers, which is quite a change from last year. Tourists risked being whipped or torn to pieces limb from limb every time they complained of the roads on the first two tours. Today the farmers apologize and say "Wait till a year from now!" The change of spirit is nothing short of remarkable.

After studying conditions in more than sixty towns and cities, and nineteen of the most thickly populated counties in Wisconsin, it is not too much to say that 1913 will be the biggest year in the motoring industry in Wisconsin. Approximate figures obtained in these communities show that the gain in the number of cars owned in the territory covered is 20 per cent for 1912. The enthusiasm now prevailing, which will culminate in purchases during the 1913 season, ought to make a gain of at least 25 per cent next year. If this is true in the thickly populated sections, it is more true in the lesser populated parts of Wisconsin, where the motor car has gained a foothold comparatively recently.

1913 Looks a Big Year

The crop experts on the run expressed gratification over the crop conditions. In some places the late June and early July drought has caused some damage, but on the whole all grains and corn look fine and the 1912 crop should be even better than 1911. These are good signs for the motor car man, and the condition in part accounts for the increased car orders now being placed.

The medium-priced and so-called cheap cars are doing the business in the sections visited by the tourists. Except in the cities, the high priced cars were a rarity. Farmers are buying cars, and lots of them, but they are not putting all of their eggs in one basket.

After such excellent conditions have been found and so many opportunities presented to the man who will go after the business, it is all the more regrettable that only a few dealers participated in the tour. Many excuses are given, but few seem valid.

The entry list would seem to indicate that the reliability tour is losing its popularity. That it is losing its popularity among the tradesmen, who reap the profit, is true in Wisconsin. But among the people, those who are spending their money for cars, the state tour is even more popular than it has been. These people are "from Missouri" and they want to be shown.

New York Court Sustains Dyer Patent

Judge Veeder Renders Decision in Case of Enterprise Automobile Co. of Hoboken, N. J., Against Albert Solvay in Suit Brought to Determine Validity of Gearset Device

NEW YORK, July 19—The Dyer gearset patents were sustained today in a decision of Judge Van Vechten Veeder, in the United States district court. The Dyer patents are letters patent No. 921,963 and No. 885,986. Forty claims of the latter patent and the whole of the former one were sustained and declared to be valid and infringed in the suit brought by the Enterprise Automobile Co. of Hoboken, N. J., against Albert Solvay, a Brooklyn liveryman and owner of two Darracq cars.

Proof of the patent was made and a defense was filed in behalf of Solvay. The final argument was made June 10 and the matter has been in the hands of the court since that day. The interlocutory decree awarded a permanent injunction, accounting and damages. The claims which were sustained are very broad and cover in general the combination with a driving shaft made in two parts of a gearcase and a two-part clutch connecting the two shaft parts; one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part rotating with it, an auxiliary shaft mounted in rigid bearings carried by the gearcase and gears movable in a fixed plane on the auxiliary shaft. There also is specified means for longitudinally sliding a moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with the gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation—that is to give the speed reduction in the gearset. A jaw clutch for direct drive and a reverse gearing also are included in the claims.

The seventeen claims of patent 885,986 which were not covered, or which were not mentioned in the decree are as follows: Claim 18 covers a phase of reduced speed gearing that is disconnected when not in use. Claim 19 is the same except that it includes a reversing gear. Claims 32 to 45 deal with details of operation; 47 is for a means for directly connecting the driving and driven shafts with all intermediate gears at rest. The seventeen claims were not in issue so far as appears on the record.

While the court went to considerable length in considering the case, the defense that is promised when the same patents are tried out in the basic suits against the Maxwell, Winton, Locomobile and Saurer companies will be much more elaborate and detailed.

Motor car manufacturers have been awaiting this decision with interest as the Dyer patents under litigation have a bearing upon the gearsets employed by several of them. The fact that the test case was decided in favor of the Enterprise Automobile Co. and the Dyer patent claims sustained may open the way to other suits.

UNIVERSAL CANCELS OPTION

Detroit, Mich., July 20—The option on the Universal Motor Truck Co.'s plant, which was held by W. E. Flanders and the Studebaker interests, was cancelled by the directors of the Universal company at a meeting held Thursday. This leaves the truck concern entirely in the hands of the Schlitz brewery interests of Milwaukee, represented by Messrs. Uehline and Kopmeier, and F. K. Parke, of Detroit.

The capital stock of the company will be increased to a million dollars, the interested parties having already added $500,000 to the capitalization to make possible the enlargement of the plant and the production of an entirely new truck proposition in addition to the present product. The new machine is a worm-drive affair, having a capacity of 1 ton, and has been in the course of its development for some time.

It is the intention of the directors to make the concern the largest truck manufacturing plant in the city, if not the largest factory in the world devoted exclusively to the manufacture of commercial cars. With this end in view, unlimited capital will be placed at the disposal of the organization, according to Mr. Kopmeier.

DECIDES AGAINST BERGDOLL

Philadelphia, Pa., July 20—Judge Audenried filed an opinion in common pleas court No. 4 Thursday awarding judgment for $104,000 to the Westinghouse Machine Co. against the Louis J. Bergdoll Motor Co. to recover a balance due for the furnishing of 1,000 gasoline motors. The companies entered into a contract on March 15, 1910, whereby the manufacturers were to supply the engines for a total of $210,000. A dispute arose over the manner in which installments on account of the purchase price were paid and in which the motors were supplied. The Westinghouse company brought suit and secured the judgment on a rule for want of a sufficient affidavit of defense.

C. W. NASH SUCCEEDS MEAD

Detroit, Mich., July 22—While in no way relinquishing his position as vice-president and general manager of the Buick Motor Co., of Flint, Mich., which he has held for the past 2 years, C. W. Nash has assumed the position of vice-president of the General Motors Co., of which the Buick company is a subsidiary. His added responsibility to the parent concern will in no way interfere with his supervision of the affairs of the Buick plant, for the success of the product of which he is largely responsible.

An announcement of a change in the personnel of the Olds Motor Works organization at Lansing is to the effect that George L. East has resigned as director of advertising to become affiliated in a similar capacity with the Amplex Motor Car Co., of Mishawaka, under W. J. Mead, who recently became the president and general manager of the Indiana concern. He will be located at the Chicago offices of the Amplex company, where it is planned to conduct the sales and advertising departments.

FORD WINS BUFFALO SUIT

Buffalo, N. Y., July 22—Judge Hazel late this afternoon granted a temporary injunction to the Ford Motor Car Co., restraining the International Automobile League of Buffalo, composed of John H. Tranter, Alfred C. Bidwell, William Priess, and John C. Hurley, from selling Ford cars at less than the standard price, infringing on Ford patents and from confederating with the dealers to procure machines at less than cost. The officials of the International Automobile League of Buffalo are ordered by Judge Hazel to appear in court on Tuesday, July 30, to show cause why the injunction should not be made permanent and also to appear before him the first Monday in September to reply to the bill of complaint.

CHANGE IN OTTO PLANS

Philadelphia, Pa., July 22—The Otto car will be handled in future, as far as sales are concerned, by the Otto Gas Engine Works, the original manufacturer of the car, according to announcement. For the past year the line has been handled and sold by the Otto Mobile Co. of Mt. Holly, N. J., which went into the hands of receivers last week. The manufacturing company announces that it has no corporate connection with the embarrassed concern. The plan of handling the line has not been presented in detail, but it is probable that the manufacturers will contract directly with dealers throughout the United States and abroad.

MACK IN NEW LINE

New York, July 22—John M. Mack, one of the founders of Mack Brothers, makers of the Mack line of motor trucks, now included in the product of the International Motor Co., which has also the Hewitt and Saurer lines, has resigned his position as vice-president and has entered another phase of the manufacturing field. It has been announced that he has formed a $600,000 corporation to manufacture motor fire engines and motor cars at Allentown, Pa., and has secured control of the Webb Automobile Fire Engine Co. of St. Louis.

It is stated that the manufacturing op-

erations will be transferred from St. Louis to Allentown and that the new company has secured the plant of the Allentown Machine and Foundry Co., to which will be added a brassmaking plant now located in Philadelphia and controlled by Mr. Mack. Just what changes will be made in the construction of the Webb line have not been announced.

WHITE ABANDONS YEARLY MODEL

Cleveland, O., July 22.—The White Co. has given up entirely the idea of announcing and bringing out new models at a certain specified time each year. Hereafter the various cars will be known by their model leters, without reference to date, and a model will continue, irrespective of the year, until it is found advisable to change it. At that time the current model designation will be dropped, and a new one used to differentiate between the old and the new cars. Any change in models that is found advisable will be made as soon as it is apparent that such a change will be a real improvement to the car. There will be no 1913 announcement made by the White Co.

OVERLAND'S 1912 PRODUCTION

Toledo, O., July 22—With an actual total production of 20,845 cars for the 1912 season, the Willys-Overland Co. finishes, August 1, its most successful year since the organization of the company.

The fiscal year of the Overland ends July 31 and the monthly production of cars for the past year is as follows: August 1911, 284 cars; September, 869; October, 1,472; November, 1,851; December, 1,588; January, 1,826; February, 2,201; March, 2,960; April, 3,011; May, 2,605; June, 1,591; and July 539.

"These figures represent the actual number of cars shipped from the Overland plants and do not represent the total number of orders received from our dealers," says Vice President G. W. Bennett. "In no way have these figures been exaggerated. Our output for 1913 will approximate 40,000 cars."

FAST WORK BY MERCEDES

Chicago, July 24—A cablegram received today by L. B. Kilbourne, partner of Charles Y. Knight in the Knight engine business, conveys the information that a 4 by 5-inch four-cylinder Mercedes-Knight has just run 30 hours on European roads at the rate of 78 miles an hour. It is not known just where the test took place.

RECEIVER FOR DETAMBLES COMPANY

Anderson, Ind., July 20—John C. Teegarden, an attorney of Anderson, has been appointed receiver for the De Tambles Motor Co., of Anderson. The action was taken on a petition brought in the federal court in Indianapolis, alleging that the company is insolvent and has been paying certain creditors, thereby making their claims preferred. The creditors filing the involuntary bankruptcy petition were the Class Journal Co., Michelin Tire Co. and St. Louis Screw Co., whose claims aggregate $5,476.32. Two suits were brought in the Madison county courts recently asking that a receiver be appointed for the company.

MEYERS ON U. S. M. COMMITTEE

New York, July 23—Sidney S. Meyers, attorney for the Motor and Accessory Manufacturers has been elected a member of the creditors committee now active in handling the affairs of the United States Motor Co. finances. The move was made in order to maintain close touch between the banking creditors who originally took action to grant the present 90-day extension of credit and the merchandise creditors reports of June sales by the United States Motor Co. are to the effect that the business was in the neighborhood of $2,000,000 and so far in July the promise is for about as much more.

MAIS RECEIVER NAMED

Indianapolis, Ind., July 22—On a suit brought in the superior court by Edwin King, Judge Collier has appointed Franklin Vonnegut receiver for the Mais Motor Truck Co. It is probable that steps to sell the company's property will be taken within the next 30 days.

King is a contracting builder who built a factory building for the company at a cost of $5,050 on which he has received $2,800. The suit was brought to protect a mechanics' lien against the property. King alleges the company is in danger of insolvency and has no money with which to conduct its business. He does not charge, however, that the company is insolvent. The complaint alleges that on July 1 the company's assets were $250,000, the liabilities $180,000, the latter not including $66,000 of outstanding notes.

Will H. Brown, president of the company, said he had no comment to offer at this time regarding the suit, except that it was thought the company's affairs would be straightened out through the proceedings. Harold S. Block, a stockholder, brought receivership proceedings against the company last November, but this suit was not pressed when satisfactory arrangements were made. This suit was dismissed prior to the filing of King's complaint.

Fisk Rubber Co. Wins Big Patent Suit

Massachusetts Court Holds Chicopee Concern Does Not Infringe Thropp Device Which is Based on Tire-Forming Idea, Case Being Dismissed by Reason of Anticipation

BOSTON, MASS., July 23—Special telegram—Judge Brown of the United States district court of Massachusetts, has handed down his opinion in the suit in equity filed by the De Laski & Thropp Circular Woven Tire Co. against the Fisk Rubber Co. of Chicopee, Mass., in which he dismisses the bill.

The suit alleged infringment of the Thropp patent granted in 1905 and it was important to all tire companies, for had it been sustained it would mean the paying of large royalties to the De Laski & Thropp company by all tire manufacturers. It is one of the most important tire decisions ever made and the outcome has been awaited anxiously by the tire manufacturers.

The Fisk company produced evidence from Akron, Detroit, Hartford, Cleveland and other places where tires are made to prove that the claimant was not entitled to any basic claims on his patent and Judge Brown upheld the contention of the Fisk Rubber Co.

Infringement of claims 1 and 2 of letters patents No. 822,561, to P. D. Thropp for apparatus for manufacturing tires is alleged in the bill. Application for patent was filed in 1905 and the patent is dated June 5, 1906. The invention relates especially to apparatus for holding a clincher tire in position during the process of vulcanizing. Claim No. 1 covers a tire-forming apparatus comprising an annular core or mandrel with annular pressure rings to engage the clincher edges of the tire, leaving the outer body portion exposed. There also are specified means for forcing the pressure rings into position. In connection with this, claim No. 2 specifies an inwardly extending rib attached to the mandrel.

The invention, according to the complainant, lies in the apparatus for moulding and giving pressure to tire casings during vulcanization by what is known as the one-cure wrapped-tread method, in which the inner casing, including the thread, is built upon a core at one time of unvulcanized stock. The side pressure rings then are applied and inclose the clincher part of the tire, leaving the outer body portion uninclosed. The whole is spirally wrapped with a porous case and submitted to a vulcanizing heat.

The bill was dismissed on the grounds that claims No. 1 and No. 2 of the patent are invalid by reason of anticipation, as it was shown that most of the tire makers had constructed similar apparatus prior to the date of the patent in suit.

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Transcontinental Highways

MORE than ever before is the attention of the people and the governments directed to highways that will lead from the Atlantic to the Pacific. A few years ago the cross-country motorists exploited the theory in glowing terms through the columns of the press in every city and hamlet passed through; but it generally stopped here. Within the last year a new phase of transcontinentalism has appeared, the program has advanced a long step, the matter has been brought to the attention of the statesman and the question at once brought into the political arena. Congressmen have been asked to pledge themselves to the movement; state governors have been approached to have such a plank incorporated in the state platform; and even presidential nominees have been asked which way they are facing in the matter.

For a time transcontinentalism was side-tracked because of the federal aid movement in the building of roads, which has been exploited at every good roads convention for the past 2 years. With the feeling that many states that have spent enormous sums of state money in road building would be opposed to the federal aid scheme there has arisen a feeling that federal aid could be obtained for a series of transcontinental roads if not for a universal road system throughout the country. The feeling is that the Washington government could furnish half of the funds, the state the other half. In some sections the financial analysis goes further and divides the half assumed by the state so that the state pays but one-quarter and the county the other quarter. This final analysis is a good one in that it gives the people along the right of way a more direct interest in the road.

Wherever a transcontinental highway goes the property owners fronting on it should have a direct interest in the highway, they should have to aid in building it through their county organizations, as well as indirectly through the state and also through the federal authorities. Home interest is a big asset in road construction, it is the one certain way of maintaining interest, and prevent paupery in the road building zone.

It is questionable if for many years hence the eventful transcontinental highway will be settled upon. At present the road building enthusiasm is rampant enough to want nearly a score of cross-country roads; every new good roads organization wants its town or city to be on a highway that leads direct from the Atlantic to the Pacific. This spirit coupled with shifting the movement into the political arena will develop the danger of making the routes of national cross-country highways fields for political intrigue. Already in some highways across states the political influence has been such that the natural course has been left and wholly unnatural roundabouts incorporated into the highway. So glaring have some of these political schemes been that the traveling public have refused to follow the lines outlined and have taken the normal and rational route. Already such a spirit is growing at a dangerous pace. Municipalities have offered large sums of money if their city or town, or historic center, can be incorporated in a trans-nation highway. Such will never be possible. The persons entrusted with laying out a highway must look upon the project through the eyes of the sculptor, who fashions the marble of this age so that it meets with approval in the eyes of generations yet to come. Trans-national highways will be monuments, monuments that must endure, monuments that must meet the needs of millions yet unborn. Trans-national highways are not merely roadways for this generation or for the next but for billions yet unborn, consequently the persistence of some glib-tongued politician setting his cap for immediate endorsement must not be a determining factor in where and wherenot the national highway crossing the Alleghanies and the Rockies shall go.

Skidding Dangers

THE more general use of oiled roads this season has greatly increased the number of serious skidding accidents and particularly was this so during the recent heavy rains that were so general throughout the eastern part of the country. From every state has come the story of the car skidding on the curve, striking the telegraph pole, crashing into the tree or turning completely around on the slippery pavement and ending up in a deep ditch. In many of these accidents old drivers were at the wheel, in others it was the amateur, and in practically every case special precautions against skidding such as the use of anti-skid devices or anti-skid tires were not attended to. It but once more demonstrates the disposition of so many to tempt fate, to imagine their tires have special adhesive propensities and to laud their driving ability.

There is little necessity for skidding if only the rational attention is given. With the present highly-crowned roads, slippery with oil and then deluged with water it is highly difficult to proceed in safety without adequate anti-skid provisions and it calls for the utmost care under such circumstances, in fact, the driver is scarcely ever sure of being safe. Some of the serious skids have taken place at speeds of little more than 15 miles per hour. There is only one preventive and that is the stitch-in-time method. Do not wait until the skid before attaching your anti-skid devices; take time by the forelock and be on the safe side.

Losing Accessibility

SEVERAL of the 1913 models at present announced or ready for announcement appear after a cursory examination to be more complex and less accessible than the models of this season and many of last season. This is due to new arrangements, new devices and new systems. With some the complexity of a new self-starting system has resulted in making the magneto much less accessible and in generally confusing the otherwise clean-cut appearance of the motor. The more or less unsettled position of the lighting generator has had a confusing effect on the motor. With some it has been an after-thought.

It must be said that although such improvements as self-starters and electric generators must be considered, that while other older accepted motor equipments have been rendered less accessible by the installation of the new, yet these older parts can afford to be so housed in because they have traveled far through the gamut of evolution and many of them are in a sufficiently developed and perfected state as rarely to call for any attention, so that the recent inaccessibility becomes less of an inconvenience than it appears on first glance. Motor Age has since its inception stood for accessibility and still stands stronger than ever for it and believes that the present positions and arrangements of some of the motor appurtenances are impossible as permanent locations, and further that they will be entirely altered before the lapse of another year.

Minerva-Knight and Hermes Teams Tie

PARIS, July 21—Special cablegram—The three-car teams of the Minerva-Knight type and Hermès cars tied for first place in the 2-day Belgian grand prize race run over the Ardennes circuit and which closed today. The 2-day event comprised twelve rounds over the 30-mile course for each day's race, making the total distance 720 miles.

Ten teams of three cars each and individual cars started yesterday. Among these were the Lion-Peugeot, of French grand prize fame, a Mercedes-Knight team, three Opels, three Benz and three Excelsiors, and three-car teams of S. S. A. V. A., F. A. B. and Vivinus makes. Two grand prizes of France Schneiders were also entered but did not constitute a complete team. Besides there was a German valveless, a Chartier, Rolland-Pilan, Hispano Suiza and Ford.

While there was not one fatal accident, one car was wrecked in the course of the race, this being a standard Ford car. The Mercedes team of cars having Knight engines with 4.5 liters on 275 cubic inches piston displacement were penalized 1 point, due to a slipping clutch, and the Opel team 6 points, owing to varied troubles. One of the Peugeot cars was braked by its driver when the spectators rushed on the track, causing the universal joint to be damaged and entailing 1 point to its team which was eliminated when Zuccarelli, one of the drivers, experienced timing gear trouble. Besides this team, the S. S. A. V. A. and F. A. B. cars, as well as the Gormain machine, were withdrawn.

The cars entered were classed by piston displacement under three classes, 20 liters, 30 liters and 4.5 liters. Each class of car was assigned a mean speed at which to make every round of the course. For instance, the 30-liter cars were ordered to maintain an average speed of 64 kilometers, or 24 miles an hour. The rating of the cars' work was done on the following basis: The first round every day done within the assigned time was counted 1 point each; the following lap was valued .1 higher than the preceding one, making the second lap count 1.1 points, the eleventh 2 and the twelfth 2.2 points. The times assigned to the cars took in the time necessary to make a reasonable number of tire changes so that time loss above the maximum time allowed to the cars was proportionate to actual trouble on the course.

PORTER WATSON CUP WINNER

Syracuse, N. Y., July 24—Twenty-five cars competed in the third annual run held by the Automobile Club of Syracuse for the B. E. Watson trophy cup, held Saturday to Trenton Falls and return, a distance of 143 miles. This was the longest run yet held for the cup. The run

Belgian Grand Prix, a 2-Day Event, Brings About Warm Competition

out was made via Rome and the return via Utica. The weather conditions were ideal. A short stay was made for dinner at the Trenton Falls hotel and the cars checked in on the return at about 7 o'clock, the start having been made at 9 a. m. Trenton Falls is in the Adirondack foothills, 20 miles north of Utica. R. E. Porter, driving an Overland, won the event, which was, as usual, a sociability run, the winner being he that should come nearest a secret time allowance based upon the speed regulations of the general state law and the various towns and villages traversed. Mr. Porter made the trip in 7:54:12, coming within 2 minutes of the secret time, which was 7:51:18. J. L. Youman's Mitchell car was second with 7:47:32, and C. Badgeley was third with 7:56:17. He drove a Franklin. Miss Pearl E. Cheshire, 18 years old, won the woman's cup with a Ford, her time being 7:28:54. The trophy was offered by the club. Mrs. L. C. Whitbeck was the only other woman driver.

Coming Motor Events

July 22-27—Cadillaqua celebration at Detroit, Mich.
July 27—Track meet; Rochester, N. Y.
August 5-7—Pacific Highway convention; San Francisco, Cal.
August 8—Minneapolis-Winnipeg tour.
August 8-9—Banta trophy team match, Chicago Motor Club.
*August 8-10—Galveston beach meet; Galveston, Tex.
August 10—Hill climb; Whittier, Cal.
*August 30-31—Elgin road races; Chicago Automobile Club; Elgin, Ill.
*September—Commercial vehicle run; Chicago Motor Club.
September 2—Track meet at Winnipig, Canada.
September 3-6—Chicago Motor Club's truck demonstration.
September 17 — Grand Prix; Milwaukee, Wis.
*September 20—Wisconsin challenge and Pabst Trophy races; Milwaukee, Wis.
*September 21—Vanderbilt road race; Milwaukee, Wis.
September 17-20—Fire engineers' convention; International Association Fire Engineers, Denver, Colo.
September—Track meet; Universal Exposition Co., St. Louis, Mo.
*October 7-11—Chicago Motor Club reliability run, Chicago.
October 12—Track meet; Rockingham park, Salem, N. H.
November 6—Track meet; Shreveport Automobile Club, Shreveport, La.

*Sanctioned by A. A. A.

SHOWS

September 23-Oct. 3—Rubber show, Grand Central palace, New York.
September 26-Oct. 6—Exposition agricultural motor cars, Bourges, France.
November 8-16—Olympic show; overflow November 22-30 Agricultural Hall.
December 7-22—Paris salon.
January 4-11, 1913—Cleveland show.
January 11-18—New York pleasure car show; Automobile Board of Trade; Madison Square Garden and Grand Central Palace.
January 11-22—Brussels, Belgium show, Centenary Palace.
January 20-25—New York truck show; Automobile Board of Trade; Grand Central Palace and Madison Square Garden.
January 20-25—Philadelphia show.
Jan. 27-Feb. 1—Detroit show.
February 1-8—Chicago show.
February 10-15—Minneapolis show.
February 17-22—Kansas City show.
Feb. 24-March 1—St. Louis show.
March 3-8—Pittsburgh show.
March 8-15—Boston show.
March 17-22—Buffalo show.
March 19-23—Boston truck show.
March 24-29—Indianapolis show.

DETROIT HAS IMMENSE PARADE

Detroit, Mich., July 24—Detroit, the motor car city, came into its own yesterday afternoon when more than 5,000 beautifully and cleverly decorated motor cars paraded through the streets before a record-breaking crowd. The long column, which was three abreast in many places, took an hour and three-quarters to pass the reviewing stand, and was without question the largest assemblage of machines ever witnessed by the people of any time. The parade was formed at the corner of Woodward avenue and Grand boulevard and passed down Woodward to Jefferson, then eastward on that thoroughfare to East boulevard, where it was disbanded, a distance in all about 6 miles.

A number of the Detroit manufacturers were represented in the unique procession, the Studebaker Corporation exceeding all others in the number of cars in line.

ANOTHER SOCIABILITY PLANNED

Washington, D. C., July 22—So successful was the sociability run of the Automobile Club of Washington, held several weeks ago, that the club is planning to promote another contest along the same lines. A different route will be laid out and efforts will be made to secure the entry of more than 100 cars. It is likely President Taft will be asked to set the secret time in which the run will be made.

TESTING MICHIGAN LAW

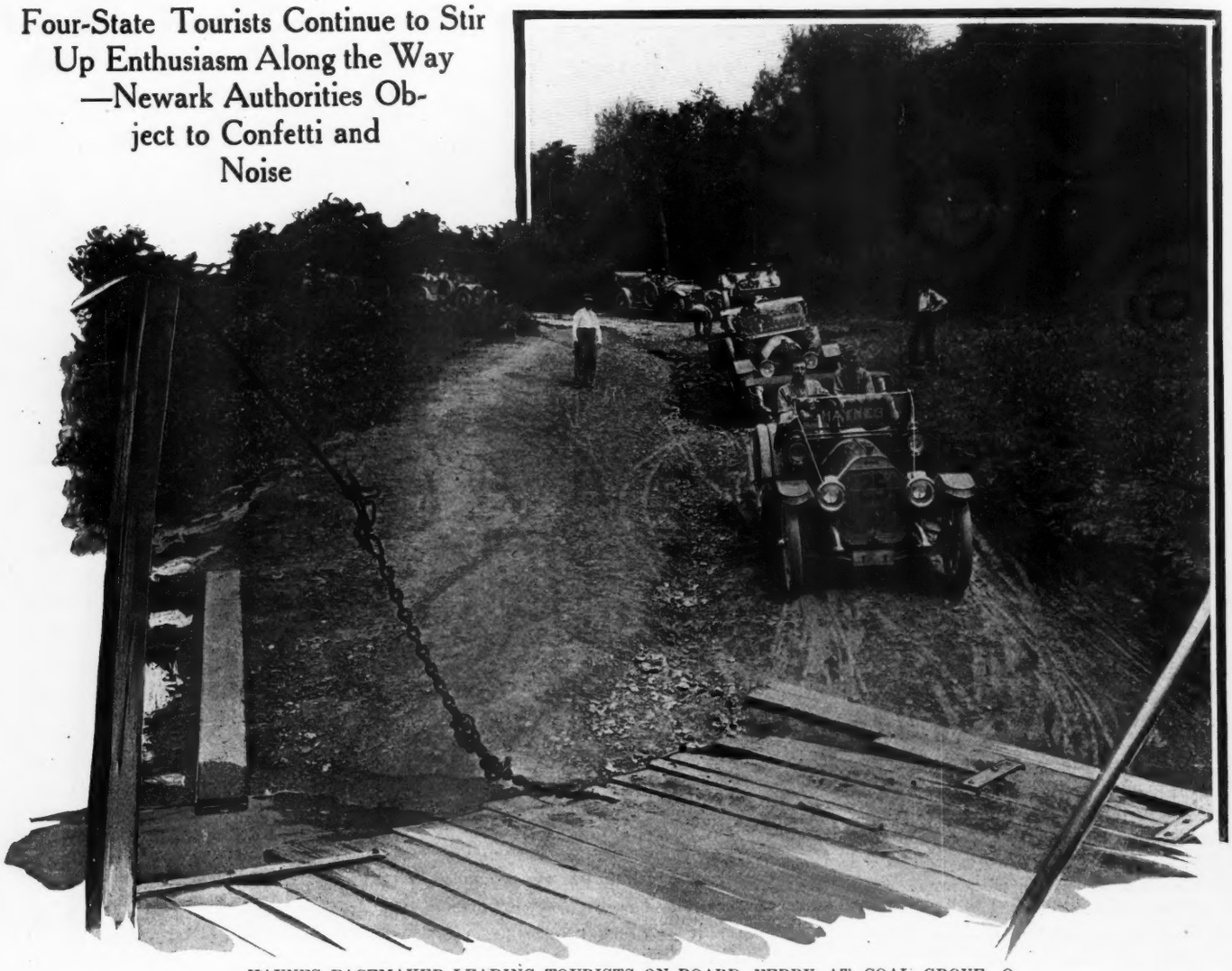
Washington, D. C., July 24—Car owners are interested in a suit filed today in the United States Supreme Court to test the constitutionality of the Michigan law of 1909, making an owner liable for damages done by a machine without regard to who was driving it when the damages were inflicted. The Metzger Motor Car Co., held liable to pay a farmer $1,800 for damages by one of its cars driven without its consent, claims a state is without power to pass such a law.

IMPERIAL GETS NEW PLANT

Detroit, Mich., July 22—The Imperial Automobile Co., of Jackson, Mich., has acquired ownership of the factory buildings where the Buick company has been manufacturing motor trucks.

Hoosiers Drift Down the Ohio River

Four-State Tourists Continue to Stir Up Enthusiasm Along the Way —Newark Authorities Object to Confetti and Noise



HAYNES PACEMAKER LEADING TOURISTS ON BOARD FERRY AT COAL GROVE, O.

HUNTINGTON, W. Va., July 21—Afloat upon the Ohio river tonight are twenty-eight Indiana motor cars participating in the four-states tour of the Hoosier manufacturers. At 3 o'clock tomorrow morning, in tow of the old stern-wheeler Tacoma, they will start down the muddy river to Maysville, Ky., a distance of approximately 100 miles. For 4 more days the Indiana caravan will be on its mission of spreading the interest in the motor cars manufactured in the Hoosier state.

Journey an Eventful One

It seems like a long cry since the tourists left Indianapolis on July 9. They toured northward to Fort Wayne; thence eastward through Lima, Tiffin and Akron; south and west through Canton, Wheeling, Zanesville, Columbus, Chillicothe and Portsmouth. It has been a full week since they left the rubber city. The remaining 400 of the total 1,400 miles takes the tour through Kentucky and Indiana, passing en route Paris, Lexington, Frankfort, Louisville, and Columbus, Ind. It is expected that the best roads of the trip will be found in Kentucky, and Kentucky hospitality already has been shown in towns of this old state through which the tour has just come.

There have been many interesting incidents in the week's sojourn in Ohio and their entrance into the country below the Mason and Dixon line. For example, there was the pleasantry in Newark when the tourists were arrested successively for throwing confetti, making undue noise and blockading the streets, followed by their leaving the city with much hilarity; there was the cloudburst between Circleville and Chillicothe, when the cars on ordinary roads ran through water up to their frames; then there was the experience of a red-fire parade, with more than 150 motor cars in line, in Portsmouth.

And as a climax to the week there was the passage through three sections of three states in the course of as many hours on Saturday, in running from Portsmouth to this city. In each of these three states there were enthusiastic representatives of the state motoring organizations who greeted the Indiana visitors and bade them welcome.

Traveling Through Ohio

A week in eastern and southern Ohio brought to the Hoosiers much of business and at the same time numerous situations of unusual interest. It so happened that upon the day the four-staters arrived in Columbus there was the convention of the Federation of American Motorcyclists occurring, and for miles surrounding the Buckeye state capital the two-wheeled devotees were running. Over the old National pike from the east the Indian motor cars and the New York, Pennsylvania, and Maryland motor cyclists toured together. It was indeed a practical demonstration of the mobility of a force of hardy men through the aid of motor-propelled vehicles.

It was felt that were this happening in any other country, particularly in Germany or France, that this would be made the occasion of pronounced military demonstration on a small scale. Here were

twenty-four passenger vehicles and four trucks—the roads could have carried many times that number—and hundreds of motor cyclists to act as scouts, all garbed in regulation uniforms, and looking for all the world like an auxiliary of the National Guard.

National Pike Neglected

During this run the tourists keenly felt the negligence of some authorities in permitting the fine old National pike to disintegrate into the roughest roads experienced on the tour up to that point.

From Wheeling to Columbus the National road was a heart-breaker. It was only the skill of the Hoosier drivers that prevented a flock of broken springs. After the tour left Wheeling until it arrived in Zanesville there was not a half a mile that was not punctuated with abrupt breakwaters. After the tourists left Zanesville they detoured to Newark from the National road at Mount Hebron and returned to it at Aetna. Between Aetna and Reynoldsburg there are 6 miles of road that even the far southwestern Indiana trails would put to shame. This road will not admit of a speed of over 5 miles an hour and is one chuck hole after another about 6 to 18 inches in depth.

For the first time in the history of organized touring of motor cars a tour was abruptly ordered out of a city by one of its uniformed officers. When the Great Western confetti car rolled into the little Ohio city—made famous by the lynching of a white youth posing as an anti-saloon league detective some years ago,—the pilot of the tour, W. D. Edenburn, was placed under arrest for strewing clean confetti over the seldom-swept brick streets of that city.

The pilot was released, after some little detention in the city offices, with a reprimand. Hurrying to the square he warned the arriving tourists that arrest would follow the distribution of advertising matter. The bluecoat that so officiously arrested the pilot, then ordered the tour to move on as the cars were blockading the nearly deserted streets.

With the exception of this semi-humorous incident the hearty welcomes gladdened the hearts of the tourists, although the strain is telling and the contestants are being over-entertained. The Columbus Club gave the tourists guests' cards and royally entertained them during their sojourn. Chillicothe, the old state capital, turned out en masse to see the cars parked on the public square. It was estimated by Portsmouth officials that more than 10,000 persons stood along the line of march during the red-light parade. On arriving in Huntington the mayor turned over the city to the Hoosiers and a banquet at the Guyandotte Club in the evening was preceded by a band concert in front of the official hotel.

The cars were loaded on three large barges during the afternoon today. The Indiana Automobile Manufacturers Association built a trestle 70 feet in length to reach the barges and the cars were driven on. They will be unloaded at Maysville in the order of the line of march and proceed to Lexington. A band accompanied the tourists.

Dealers Are Interested

The dealers in the cities through which the tour has passed in the last 7 days have been much more interested than those on the first leg of the journey. The manufacturers are building up a wealth of prospective business and closing several dealers. The dealers are bringing their prospects from miles around the tour instead of losing ground is gaining as it nears the home stretch.

The itinerary has been lengthened by 1 day that the tourists might rest within hailing distance of Indianapolis at Columbus and be ready for the homecoming. All the civic organizations of the Hoosier capital will unite with the motor organizations in giving a banquet to the returning trevellers at 8 p. m., July 25. The tour will leave Louisville at 9 o'clock July 24 and run to Columbus where the cars will remain until, 1:30 the next day arriving in Indianapolis at 4:30. They will all be parked in the circle around the Soldiers' and Sailors' monument until 7:30 when the tourists, clad in their road costume, will form and parade to the German house where the festal board will be spread.

FOUR-STATERS HALT IN PARK IN EASTERN COLUMBUS BEFORE ENTERING CITY

FOUR STATERS LEAVING KENTUCKY FOR WEST VIRGINIA

ELECTRIC GLIDDEN PATHFINDER

New York, July 22—The committee in charge of the pathfinding for the A. A. A. national reliability tour met on July 16 and awarded the privilege to the Flanders Mfg. Co. of Pontiac, Mich. The method of doing this most important work will be unique, in that a Flanders electric will be utilized. The car probably will start on its trip within a week and special arrangements are being made for recharging the car along the entire route.

The details of the route will not be known until the return of the pathfinding car, which probably will be on the road all of 2 weeks, and possibly longer gathering route information.

Bruce-Brown Enters Elgin Road Races

Grand Prix Winner, Just Back from France, Elects to Drive in Free-For-All at Chicago Automobile Club Meet—Falcar in Aurora Cup Event—Four Mercers Are In

CHICAGO, July 23—The Chicago Automobile Club is receiving considerable encouragement in the promotion of the Elgin road races, which have been set for August 30-31. While the entry list is not so very lengthy at the present time, the blanks having been issued only last week; still, there are many prospects in sight and it would seem as if the club would have little difficulty in filling all four of the races which have been scheduled.

The success of the free-for-all, the feature of the second day, was assured yesterday when Fred J. Wagner, representing the club in the east, wired the entry of David Bruce-Brown, just back from France. Bruce-Brown will drive in the free-for-all, but so far he has not decided what car he will pilot. Inasmuch as Milwaukee claims him with a Fiat, it is presumed that the American grand prix winner will handle one of that make. Inasmuch as both Ralph Mulford and Erwin Bergdoll, Vanderbilt and Fairmount Park winners, respectively, both promised to drive at Elgin when they passed through here on their way home from Tacoma, the Chicago Automobile Club is certain of having at least three of the stars.

A telegram also was received today from Wagner notifying the club that the Mercer company has made four entries and that he will get de Palma when the latter returns from Europe. De Palma is bringing a new Mercedes with him.

The first entry actually received was one from Edward Marhoefer, president of the Fal Automobile Co., who nominated a Falcar for the Aurora cup race for 231-300 class cars. He also promised to make a second entry in the Elgin National. This marks the return of the Falcar to racing after an absence of a year. The success of this car in 1910, when it captured the Wheatley Hills trophy among many others, will be recalled.

Encouragement received by F. E. Edwards, chairman of the entry committee, leads the club to believe that inside of a week or so it will receive entries from Stutz, Mercer, Knox, Rayfield, King, Cino and several others. W. B. Huey, a member of the club, hopes to put in a Marmon, with Joe Dawson for driver.

TALK DESERT RACE PLANS

Los Angeles, Cal., July 20—At an enthusiastic meeting of Los Angeles dealers last week, George Purdy Bullard, representing Governor Hunt of the new state of Arizona, took up the matter of the next Los Angeles to Phoenix road race. It developed during the meeting that practically $10,000 would be raced for this year, including the purses for the big track events during the fair week at Phoenix.

Another meeting will be held in the course of the next 10 days, at which time the rules for the contest will be drawn up and the route definitely selected. The majority of the dealers favor the San Diego route. The track events will consist of the following:

Free-for-all, 50 miles—Purse $2,000, cut 65, 25 and 10 per cent. Must be three cars entered not in Phoenix race. Entrance fee $100 returned if car goes 5 miles; otherwise forfeited to fair association.

Track record for 1 mile—Purse $100, with additional $35 for every second cut off of :55 by winner.

Free-for-all handicap for cars in Phoenix race only, 10 miles—Purse $300, cut 65, 25 and 10 per cent.

Ten-mile handicap free-for-all—Purse $400; money cut 65, 25 and 10 per cent.

Ten-mile race for large cars in Phoenix race—Purse $400; cut 65, 25 and 10 per cent.

Ten-mile race for small cars in Phoenix race—Purse $200; money cut 65, 25 and 10 per cent. Three or more cars must start in each race.

RESULTS OF ALPINE TOUR

London, July 1—Twenty-five perfect scores were awarded at the completion of the Alpine contest, held last month in Austria. The prizes were all of practically equal value, and drawing of lots had to be resorted to to determine their distribution. Germany led with the number of perfect scores, a Mercedes, an N. A. G., three Opels, an R. A. F., three Benz cars, two Audi cars, a Hansa and a Mathis, totaling thirteen. Austria follows with eight cars, a Gräf & Stift, a W. A. F., a Lauren & Klement, a Praga, and four Austrian-Daimlers. Three Fiats, Italian, finished perfect, and one Knight-Minerva from Belgium. The tour was one of the most difficult ever run in Europe, and the fact that seventy-one out of eighty-four entrants finished, twenty-five with perfect scores, speaks exceedingly well of the quality of European motor cars.

PROGRESS OF ALCO TRUCK

Denver, Colo., July 20—Out of all possible communication with the world and without food for 27 hours were experiences of the Alco crew when a break in the huge irrigation canal near Sterling, Colo., engulfed the transcontinental truck in a sea of alkali mud.

On account of the severe conditions on terrific roads and trackless prairies the vehicle was able to cover only 121 miles, a climax to the hardship of piloting the motor freighter from Philadelphia to Petaluma, Cal. The vehicle was located in Fort Morgan, after being marooned in the heart of the flood and famine-stricken district. At this point it had piled up a distance of 2,305 miles.

A telegram from E. L. Ferguson, captain of the expedition, states that the disastrous cloudburst about Denver washed away bridges and roads ahead. This enforced a detour that added many a mile to the route of the truck.

BOSTON MAY HAVE RACE MEET

Boston, Mass., July 22—Secretary James Fortesque, of the Massachusetts State A. A. has been interviewing some of the well-known motorists of Boston relative to a race meet at the Readville track on Labor day. The plan outlined is to have twenty men each subscribe $100 as a guarantee against loss, and in case the meet proves successful these men will get their money back and the profits be divided among the Bay State A. A. of Boston, the Newton Automobile Club and the Massachusetts State A. A. As the date would follow 2 days after the Elgin races and it would not be possible to get many of the stars to Boston, some of the men approached are in doubt as to the success of the plan, believing that Columbus day would be a better date, as it comes in October, providing that Rockingham Park does not put on a meet that day. There also is talk of races at Old Orchard on Labor day so that would conflict with securing entries.

FARMERS' RELIABILITY STARTS

Dallas, Tex., July 22—With seventeen entries, composed entirely of farmers and ranchmen of Texas, the Farm and Ranch tour started this morning at 10 o'clock. The tour is the biggest of its kind ever organized, being composed of a runabout class and a touring car division, each class being divided into seven divisions. The route is practically 700 miles in length, extending from Dallas, through Waxahachie, Hillsboro, Waco, McGregor, Temple, Georgetown, Austin, San Marcos and New Braunfels to San Antonio; returning by practically the same route to Dallas, arriving Saturday night.

Entries are restricted to farmers and ranchmen who own cars. Four passengers must be carried in each touring car and two in a runabout, the owner driving. The farmers of Texas have evidenced a keen interest in the event and increased sales are anticipated by dealers in Texas as a result. The entries are:

Buick—W. G. Maze, T. O. Williams, H. L. Perkins, N. B. Flagans, G. J. Merritt, C. P. McKensie, Albert Marrs and H. V. Kendric.

Ford—C. C. Gipe, W. R. Newton, William F. Ramming, G. E. McDaniel and R. G. Roach.

Case—W. H. Anderson, T. L. Swink and W. C. Armstrong.

Mitchell—J. N. Colwick and R. B. Dunn.

Overland—O. L. Simms, Verge Coleman and W. R. Garland.

Hupmobile—E. B. St. Clair, Paul G. Lundell, S. J. Hall, W. A. Hamilton and D. B. Currie.

E-M-F—J. M. Howe and P. W. Bean.

Reo—W. G. Camp.

Cadillac—W. C. Kingsley.
Regal—E. C. Clark.
Maxwell—D. W. Rutherford, L. B. Blain and Taylor McGinnis.
Franklin—A. J. Poulter.
Chalmers—W. B. Mickle.
Oakland—B. F. Wilkinson and B. H. Mathews.
Hudson—J. Mantel.
Knox—Henry Horsford.
Brush—W. C. Christian.

In addition to the regular entries, many non-contesting cars are accompanying the tourists throughout the run.

The prizes to be awarded are a silver loving cup, to be presented as first prize by Colonel Holland, and several cash prizes. This trophy is said to be the finest cup of its kind ever exhibited in Texas. The prizes will be awarded immediately upon the arrival of the tourists.

A large number of inquiries have been received concerning the tour, from all parts of the country.

PUBLIC CARS CALLED NUISANCES

Philadelphia, Pa., July 22—That motor cars bearing "to hire" signs standing on certain of the principal business thoroughfares in the central section of the city are an obstruction to traffic and a nuisance, was a decision rendered recently by Magistrate MacFarland in the central court, who held two chauffeurs under $200 bail for court for permitting their cars to stand in front of the Bingham hotel after being warned not to do so. On the part of the accused it was contended that discrimination was practiced by the police in ordering some cars away while not molesting others, but in the case of the latter it was claimed they held permits. As no permits are issued, Magistrate MacFarland said that all chauffeurs similarly charged with obstructing the highway were to be arrested.

TRADESMEN BANQUETTED

Indianapolis, Ind., July 22—Business interests of the city paid a parting tribute to R. H. Losey, retiring manager of the local sales branch of the Buick Motor Co., last Wednesday night. Mr. Losey is to become general sales manager of the Republic Motor Co., with headquarters in New York.

Mr. Losey was asked to enter a motor car and go downtown to attend a meeting of directors of the Indianapolis Automobile Trade Association. Instead he was taken to a farmhouse east of the city, where about seventy-five business men of Indianapolis had gathered to act as his hosts at a chicken dinner. Mayor Samuel Lewis Shank was toastmaster.

Fred G. Rinker, retiring superintendent of the Indianapolis plant of the Willys-Overland Co., was the guest of honor at a dinner given by thirty-five foremen of the plant, at the Denison hotel, Indianapolis, on the night of July 17. Mr. Rinker is now with the Federal Motor Co. as superintendent of its plant in Indianapolis.

Milwaukeeans Finance Big Road Races

Business Men Respond and Prospects for Speed Carnival Are Regarded Bright—Advance Sale of Seats Already Totals $15,000—Tentative Entry of Three Peugeots

MILWAUKEE, Wis., July 23—The international road racing carnival to be held at Milwaukee on September 17, 20 and 21 has been entirely financed by the business interests of the city, a mail order seat and parking space sale of better than $15,000 has already been recorded, and nothing can be discerned on the horizon which will interfere with making the races the most successful and popular motoring events the world has ever seen.

There will be seventy-five to eighty cars on the Milwaukee course in the four events, the contests for the grand prix, Vanderbilt cup, Pabst Blue Ribbon and Wisconsin Challenge trophies. That much is assured by the promises already made to Race Secretary Bart J. Ruddle, of Milwaukee, and his associates in the east and west, among which Fred J. Wagner, starter of the A. A. A., is one of the most prominent.

The tentative entry of three Peugeot cars, including the Boillot Peugeot which won the French grand prix on the Dieppe course, has been delivered to Manager Ruddle. E. E. Hewlett, of Los Angeles, has mailed the entries of three Fiats, which will be piloted by Tetzlaff, Caleb Bragg and Bruce-Brown. It is likely that the Fiat which Bruce-Brown drove in the French classic will be brought to America, making a team of four Fiats. The three sure-thing Fiats for Milwaukee are the private car of Bragg, the car which Bruce-Brown drove to victory in the two grand prix races at Savannah and the one which Tetzlaff used to pull down the money in the Santa Monica this year.

Entry blanks which have been filled or are about to be filled are scattered all over America and Europe, and Manager Ruddle states that he is not in a position at this time to make public the definite list.

For 2 weeks the department of the Milwaukee Automobile Dealers' Association in charge of the sale of seats and parking spaces has carried on a nation-wide campaign, which already has resulted in the receipt of orders aggregating more than $15,000. This is particularly gratifying because the races are still 2 months off. The association has figured that there will be 43,000 grand stand seats, 200 boxes and 1,200 box seats, with parking space for 20,000 cars. Prices for seats and spaces have been made very liberal, as the following scale will show:

Parking spaces, $10, $20 and $25 per car daily, according to advantage of location with relation to start and finish line.

Grand stand seats, $2 and $2.50 daily. Boxes containing six seats will cost $30 daily. The general admission fee will be $1.

The mail orders are being cared for in a most up-to-date manner. Manager Ruddle has devoted considerable of his attention to the cataloging system by means of which every seat and parking space reservation can be picked out in less than a minute's time.

August A. Jonas, chairman of the racing committee of the M. A. D. A., is on a month's tour in a Cadillac through the east and up into Canada and its wilds. His itinerary includes Grand Rapids, Detroit, Cleveland, Toledo, Buffalo, Niagara Falls, Toronto, Montreal, Boston, New York, Philadelphia and Pittsburgh. He will return on August 20.

Mr. Jonas wired Manager Ruddle on Monday that the Wolverine Automobile Club of Detroit has arranged for a club tour to Milwaukee similar to the one made to Indianapolis for the 500-mile race. There will be at least 600 in the party and reservations have been made for two full sections in the main grandstand. In Toronto, Mr. Jonas was given reservations for sixty box seats. Interest in the east is running high.

Contracts were signed on Monday for the services of 1,000 members of the Wisconsin National Guard to police the course. Sheriff William Arnold, of Milwaukee county, has arranged to appoint 200 deputy sheriffs, and Chief of Police John T. Janssen expects to have 100 patrolmen and a dozen or more plain clothes men on duty during the three days of racing.

Approximately 100,000 dodgers advertising the races were distributed by the cars participating in the third annual Wisconsin reliability tour last week. Interest in the road races in even the hamlets was surprising to the Milwaukee men, and particularly surprising was the familiarity of the rural residents with the details of the races, the names of drivers, possible speed and other knowledge that only the experts could be expected to converse intelligently upon.

DEATH OF COLONEL JOYCE

Minneapolis, Minn., July 22—Colonel Frank M. Joyce, first vice-president of the American Automobile Association, and former president of the Automobile Club of Minneapolis, died this morning from Bright's disease after an illness of a month. Colonel Joyce was a son of the late Bishop Isaac W. Joyce of the Methodist church. He leaves a widow and four daughters.

Plans Made for Mammoth Tire Plant

United States Rubber Co. Proposes to Augment Its Present Manufacturing Facilities by Erecting Factory—Capacity, 2,000,000 Casings a Year—Chicago Mentioned

NEW YORK, July 22—Announcement by the United States Rubber Co. that a mammoth tire factory is to be built to augment the present manufacturing plants discloses at least a portion of the motive for the recent financial expansion of the company.

President Samuel P. Colt recommended to the annual meeting of the stockholders that $10,000,000 of liquid cash capital be added to the company's finances, but the concrete reason for the addition was not made clear to the public at the time. Now it appears that the company contemplates the erection of a new factory which will have a capacity of 2,000,000 casings a year.

While the rumored statement that the new plant would be located at Chicago and that building operations would be started in October could not be confirmed at the offices of the company, it was announced that such action was probable.

A plant of such magnitude as that outlined for the United States Rubber Co. would have a capacity about equal to the 1910 production of all the factories at Akron, O., and nearly 60 per cent of the estimated production for the current year.

For about 2 years the tire industry has been under constant and insistent pressure in all the manufacturing departments, and overtime has been the general rule throughout the industry. Some of the factories have been constantly sold ahead for from 3 months to a whole year.

In response to the announcement of the contemplated erection of the new factory, the common stock of the United States Rubber Co. became very strong and scored an advance of 2½ points on investment and speculative buying.

THE RUBBER MARKET

New York, July 22—Crude rubber has been firmer in the markets than it has at any time during the past 3 months, and while trading this week has not been of large volume, holders have been able to work off some small lots of up-river fine at $1.18 a pound. Stocks in the hands of consumers are believed to be materially less than they were in June, which accounts for the strong undertone in the actual trading. The week-end imports totaled 1,304 packages, including considerable second-hand and waste material.

PRICE OF GASOLINE INCREASES

New York, July 23—Gasoline is now 16 cents a gallon, delivered in steel barrels in wholesale lots. The advance of 1 cent was announced last week, the quotations for 200-gallon lots being raised to 21 cents. The Standard Oil Co. explains the advance on the same old grounds, namely, the pressure of demand, the limited character of supply and the rise in basic oils. At the present level in wholesale lots, the price is higher than it was at retail last year at this time and is 7½ cents above the level established prior to July, 1911, and 6 cents more than it was January 1. The owner who can purchase in wholesale lots and who gets 8 miles to the gallon, can do a mile, as far as fuel is concerned, for 2 cents. If he is obliged to buy in lots of 200 gallons, the fuel cost per mile is 2⅝ cents.

DURYEA POWER CO. DECISION

Reading, Pa., July 22—Final distribution to the creditors of the Duryea Power Co. of this city, has been made. The sum involved was $1,156, the principal claims being by Joseph Middleby and H. M. Sternburgh. The United States supreme court heretofore decided that the claim of the Berks County Trust Co. against Mr. Sternburgh for $26,000 on stock subscription was invalid and the aforesaid claim was the chief asset of the defunct company.

FRANKLIN'S ANNUAL OUTING

Syracuse, N. Y., July 20—The eighth annual outing of the employes of the H. H. Franklin Mfg. Co., held at Long Branch today, was attended by 4,000 people, the factory being closed for the day. The attendance was 1,000 more than last year, till then the record. There was a ball game and many field sports were had, including fat men's races. C. E. Owens captured individual honors by winning several events. Cash prizes were given the first three men in all events. A band was in attendance and soloists sang from the balcony of the dance pavilion. A number of the officers of the company were present.

PORTABLE GARAGE BAN REMOVED

Milwaukee, Wis., July 22—After a hard battle, manufacturers of portable steel garages have won their fight against efforts made by the Milwaukee common council to prohibit the erection and use of such structures in Milwaukee. With the full consent of the chief of the fire department, as well as the Milwaukee board of fire underwriters, the council has just passed an ordinance amending the so-called garage law, permitting the use of the steel portables. The new section is as follows:

In lieu of fireproof construction a one-story garage may be built of incombustible material provided that the floor area does not exceed 360 square feet and the height does not exceed 15 feet, measured from the floor to a point two-thirds of the height of the roof, and that such garage does not form a part of any building and is not contained in any other building; such garage shall not be built less than 1 foot from a boundary line between adjoining premises or any frame building and not more than one such garage shall be built on any 25-foot frontage of a lot. The walls and roof of such incombustible garage may consist of corrugated iron not lighter than 20 gauge, United States standard, covered with a rust-resisting coating, fastened to a steel framework, or may consist of cement plaster of not less than 2 inches solid thickness on metal lath with metal frame. The floor in all cases shall be of incombustible material and the doors shall be of metal or metal covered wood and the windows and sash shall be of metal with wire glass.

DEPARTMENT STORE ENJOINED

New York, July 22—A perpetual injunction has been granted by the United States district court against Bloomingdale Brothers, a New York department store, forbidding the company to sell Mosler spark-plugs at less than list price. A suit of the same general character as the above has been entered on behalf of A. R. Mosler & Co. against the Auto Surplus Stock Syndicate and William Wooster, its president.

ANOTHER REO DIVIDEND

Lansing, Mich., July 22—The Reo Motor Car Co. has declared another dividend of 10 per cent and about $200,000 in cash will be distributed. A few weeks ago a 10 per cent dividend was declared, making a total profit of $400,000 the stockholders have received this year. Nearly 75 per cent of the dividends goes to Lansing residents. At the present time the plant is being run at full capacity, a car being turned out every 11 minutes. Two thousand men are employed, but the company is unable to keep up with the rush of orders.

WOULD OVERHAUL PATENT OFFICE

Washington, D. C., July 19.—Representative R. J. Bulkley, of Ohio, who believes that the government system of issuing patents to investors is out of date and inefficient has offered a resolution in the house calling for an investigation with a view to complete overhauling of the patent office, including it's methods and personnel. The investigation would be made by the president's economy and efficiency commission, which would be required to make a report by December 10, 1912, with recommendations as to changes necessary to promote a better condition of affairs.

"Fully 50 per cent of the patents issued by the patent office never should be issued at all," said Mr. Bulkley. "I mean by this that 50 per cent of the patents issued are not good patents and this is proved by the fact that under the present system a patentee cannot be absolutely certain of his title until the courts have passed upon his case. Every issuance of a patent is followed by litigation and this should not be the case."

The investigation, according to Mr. Bulkley, would determine whether the fault

lies entirely with the business system or whether the patent office force is too small to give proper attention to it's work or so large as to be unwieldly. The patent office, he said, has developed to some extent into a training school for young men who soon find that they can get much larger salaries from the big corporations than the government will pay them for their services.

Mr. Bulkley is a member of the House patent committee, and declares he will push his resolution, both in committee and on the floor of the House.

RAMBLER MEN MEET

Kenosha, Wis., July 22—Reports made at the annual convention of branch house managers and staffs of the Thomas B. Jeffery Co., of Kenosha, Wis., have just been compiled and show that there was an increase of 126 per cent in the sales of the new Cross-Country model over the sales of the 1911 model of similar horsepower and design. The increase in the number of 1912 cars shipped from Kenosha over the 1911 shipments was 21 per cent. The 1912 increase in business over 1911 in dollars and cents amounts to 33 1-3 per cent. The increase in the number of dealers was 105 per cent. The 1913 production of Rambler cars will be 60 per cent more than for 1912, equally divided between the two models now being issued, the Cross-Country and the Metropolitan chassis. The Cross-Country has a 4½ by 4½ motor rated at 38 horsepower and the Metropolitan chassis carries a 5 by 5½ motor, rated at 45-50 horsepower.

REUNION OF MITCHELL AGENTS

Racine, Wis., July 22—Mitchell distributors from every state in the union attended the first annual convention at the Mitchell-Lewis Motor Co. factories in Racine from July 17 to 20 to study the new models and attend the school conducted by the factory sales and promotion department. There were present 189 branch managers, assistants and state agents. While the details of the 1913 cars have not been made public, it is known that the new issue will embody many new and radical features in design and lines, the adoption of an extra long-stroke engine being a distinguished change. Four chassis will be produced, a small four and a small six, using the same cylinders.

SYRACUSE DEALERS' OUTING

Syracuse, N. Y., July 20—The Syracuse Automobile Dealers' Association took a number of their friends on their annual outing on Tuesday of this week, the destination being Trenton Falls. The route covered 150 miles and the run embraced some of the most picturesque scenery in the state. Dinner was at Trenton Falls and supper at Utica. A ball game was a feature of the program at Trenton Falls.

Hard Road Sentiment Sweeps Illinois

Farmers Now Convinced Highways Improvement Is a Necessity —State Expects to Construct 100 Miles of Good Routes During Year—Great Enthusiasm in Small Towns

BLOOMINGTON, ILL., July 22—Hard road sentiment is sweeping over Illinois like an irresistible flood of public opinion. Nearly every farmer is a car owner now and so his views concerning improved highways have been subjected to a sharp revision. A few years ago it would have been difficult to have proven which was the more dangerous subject to mention at a farmers' institute, motor cars or hard roads. It was like shaking a red flag in front of a bull to allude to either. The times have changed, however, and the farmer good humoredly admits that he was wrong in both instances. Now, he has the car and he wants the roads.

A. N. Johnson, state highway engineer, asserts that the present year will be the most notable one in respect to hard roads Illinois has ever known. Nearly 100 miles of hard road are proposed, costing from $4,500 to $5,000 per mile to complete. Twelve hard road construction outfits, the property of the state highway commission, will have difficulty in coping with the era of hard road construction now in sight.

The entire quota of outfits is busy now and there are many other jobs in waiting. At the present time these outfits are at work at Bloomington, Pekin, Shermerville, Momence, Gibson City, Olney, Troy, Malta, Mattoon, Mt. Sterling and Sibley. Requests for state supervision of hard roads are on file from Effingham, Carbondale and Tuscola. The commission is supervising the construction of the equivalent of ⅞ of a mile of 12-foot concrete road at McLean, 10 miles south of here. A mile of concrete road is being laid at De Kalb and another mile is promised in Cook county along the line of the transcontinental road from Chicago to Clinton, Ia. At Carlinville the business men are building a mile of concrete road, 16 feet wide, extending west of that city. This road usually is impassable during the rainy season.

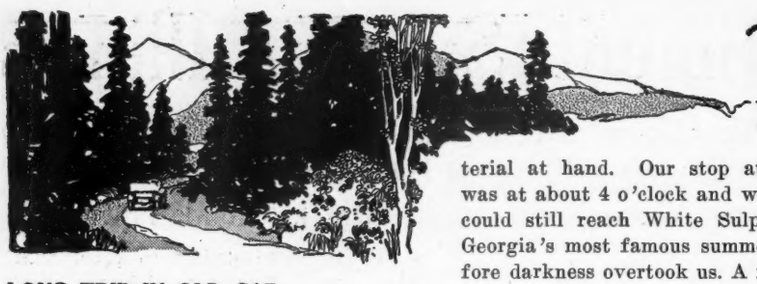
State Engineer Johnson has been attending a large number of farmers' institutes this year and hard roads furnished the principal topic. The basis of disposition of the motor car license fund is always taken up and given an animated discussion. There is no objection to the assignment of this fund to road improvement, the only difference relating to its restriction to main highways across the state or equal division among the counties. It is hoped to convince the farmers that it is wiser to put the money in a few state roads than to dissipate it by distribution among the numerous counties, giving but a few thousand dollars to each, which when spent upon the highways would make but a poor showing in the state.

LOUISIANA AROUSED

New Orleans, La., July 20—By far the most ambitious good roads plan that ever has been attempted in Louisiana is now being agitated in New Orleans and Baton Rouge. Efforts have been made in past years to build a road between New Orleans and the state capital that would be passable in all kinds of weather. Despite the thousands of dollars that have been spent in the last century on such a roadway none of the various efforts has been successful. The heavy rains and the difficulties in draining large sections have been difficulties calling for more money to overcome than has been available. Moreover, the Mississippi river serves the same territory and the fluvial highway has removed in a degree the necessity of a pike. The advent of motor cars, however, has caused a stronger demand than ever for the New Orleans-Baton Rouge model road. The plan has been submitted to the state engineers, which provides for the building of the road along the right of way of the Baton Rouge, Hammond and Eastern railway. In this way gravel, macadam and other constructional materials can be delivered at any point on the road with facility. This removes one of the causes for the failure of previous attempts where the cost of hauling material over the new roadway became so great as the road was built farther and farther away as to discourage the project. Another advantage is that the railway company is willing to provide for the drainage of the road, which can be done with little extra expense on their part, as they have their own roadbed to attend. This route will permit of using 30 miles of shell road already built between this city and Chef Menteur. It will be necessary to ferry at the Rigolets.

IDAHO INTERESTED

Twin Falls, Idaho, July 19.—The proposition of issuing $2,000,000 worth of state bonds for the construction of a main trunk line across the state, and important feeder branches, will be submitted to the Idaho legislature next year. The proposal will be backed by the Idaho State Automobile Association and its affiliated clubs, It is planned to model the bond issue along the lines of the New Jersey law, which provides for a tax on all motor cars in the state to pay the interest on the bonds, leaving ultimate redemption to the mass of taxpayers. The motor tax is to be graduated according to horsepower.



Routes and

LONG TRIP IN OLD CAR

ATLANTA, GA.—Editor Motor Age—It has occured to me that a trip which I made in a 1903 Oldsmobile might be of interest to the readers. Just a year ago in June on a Sunday morning a younger brother and myself started from Atlanta in our car, taking one suit case, the necessary commissary supplies, an extra chain, an extra tire and an emergency tank of gasoline and oil.

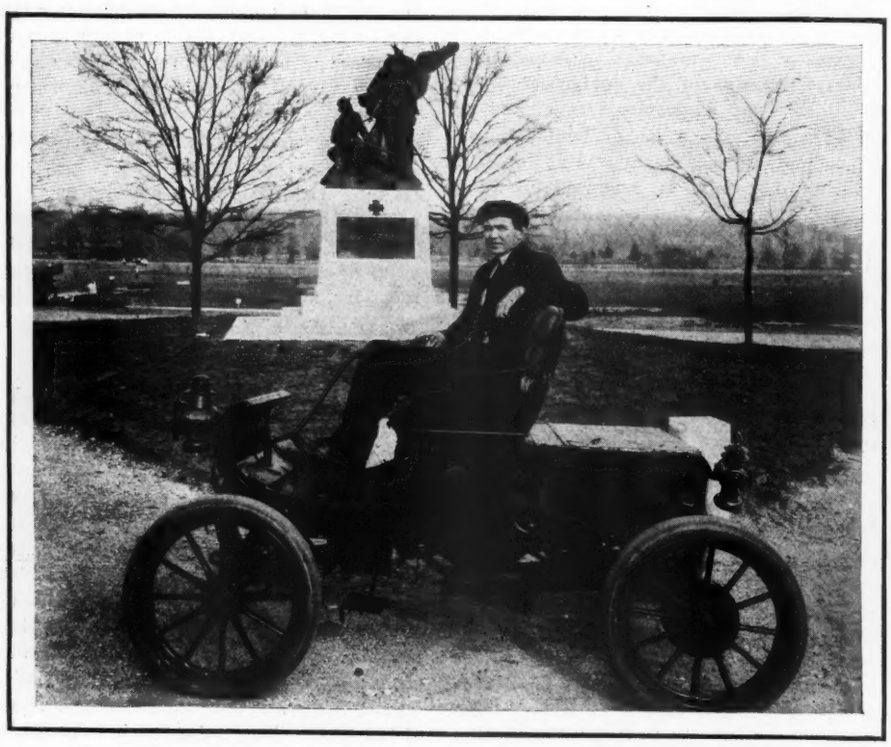
The little machine behaved beautifully over all roads and normal hills, and we proceeded at about 10 miles an hour until we arrived at Norcross, our first stop 20 miles out of Atlanta. At this point we stopped long enough to give the machine a thorough oiling and had a beautiful run to Suwanee, which is 7 miles further. We continued over splendid roads to Duluth, another 7 miles having been reeled off without the slightest mishap of any kind. Another 7 miles landed us in Buford where another oiling and gasoline feeding was administered before proceeding to Flowery Branch 8 miles distant. We soon saw ahead of us the towers and steeples of Gainesville.

Here quite a large crowd gathered and expressed an appreciation of our successful negotiation of the roads with the material at hand. Our stop at Gainesville was at about 4 o'clock and we decided we could still reach White Sulphur Springs, Georgia's most famous summer resort, before darkness overtook us. A fried chicken dinner southern style was our reward. We stayed all night, and after a bountiful breakfast the next morning, we gave the car all the necessary attention in the way of oil and gasoline, and were again on the road headed towards Tallulah, 12 miles further and located in the mountainous section of North Georgia. The scenery on all sides was perfectly gorgeous and more beautiful hills, foliage and masses of color would be hard to imagine. Our first difficult grade was encountered on this stretch and we found that the clutch band on first speed had a tendency to slip. We stopped and tightened the band, and arrived in Tallulah without further trouble. Owing to the steep hills we now encountered it was necessary to re-oil the cylinder and renew our water supply.

Our destination, Toccoa, was now 12 miles away and over very hilly roads. We forded the Dog river, the water at times reaching the hubs and to within about 6 inches of the carbureter. We proceeded without any special effort and arrived at Toccoa late in the afternoon of the second day.

Our friends were anticipating our arrival and were out in full force to give us that hearty welcome so characteristic of all these Georgian towns. It appealed to us so strongly that we were easily prevailed upon to extend our stay 3 days.

The return journey to Atlanta was made without any demands from the car other than the requisite fuel and oil supplies. We arrived at home feeling very much better for the outing. The entire distance was 230 miles.—Clarence Eidson.



NINE-YEAR-OLD CAR USED BY GEORGIAN FOR 1912 TOURING

PAW PAW TO PEORIA

Paw Paw, Mich.—Editor Motor Age—We are planning a trip to Peoria, Ill., next week. I have two directories, but cannot make anything out of either.—A. R. Miller.

South Bend is 51 miles through Decatur, Dowagiac, Summerville and Niles, and Valparaiso is reached by continuing 49 miles, touching Plainfield, New Castle, La Porte, Pinhook and Westville.

Valparaiso to Joliet, 55 miles, routes via Deep River, Merrillville, Schererville, Dyer, Richton, Frankfort, New Lenox, Gaugers, Cherry Hill, over good gravel most of the way, with a few stretches of dirt just before reaching Joliet. Passing through Channahon, Morris, Marseilles, Ottawa, you can either route by way of Streator or by way of La Salle, which will enable you to visit Starved Rock and Deer Park. The former is 85 miles through Grand Ridge, Streator, Wenona, Roanoke, Metamora, Washington, Peoria; and the later 92 miles via Starved Rock, Utica, La Salle, Peru, Seatonville, Hollowayville, Putnam, Henry, Chillicothe and Mossville.

Still another route takes you by way of Kankakee, which is 62 miles from Valparaiso, through Deep River, Merrillville, Crown Point, Lowell, Sherburnville, Momence and Kankakee. To connect with the road at Streator outlined above you will travel 53 miles via Goodrich and Dwight.

TEXAS-MISSOURI ROUTE

Fort Worth, Tex.—Editor Motor Age—I would like to have a route from Fort Worth to Springfield, Mo., laid out, with the condition of the roads, and distance. —L. D. Anderson.

The best road lies towards Wichita Falls, Tex., which affords the best crossing over the Red river. First head west for Ben Brook, Aledo, Annetta and Weatherford, then north to Adell, Whitt, Oakdale, Jacksboro, Antelope, Windthrost, and Wichita Falls. As far as the Red river, which is crossed about 2 miles after passing through Burkburnett, the roads are pretty well graded. There is a toll bridge over the Red river for which a charge of 50 cents is made for car and driver. The heavy sand on the Oklahoma side is covered with straw for about a mile and caution must be used for holes

Touring Information

concealed by it. Pass through Randlett and be careful of the creek bottoms which have to be crossed about 3 miles further. Lawton is reached through Emerson and the speedometer will register 60 miles from Wichita Falls, or 142 miles from Fort Worth.

The Chisholm trail is followed through Rohrer, Apache, Anadarko, Verden, Chickasha, Pocassett, El Reno, Kingfisher, Dover, Hennessey, Bison, Waukomis, Enid, Kremlin, Pond Creek, Jefferson, Medford, Renfrow, Caldwell, Drury, South Haven, Wellington. This is the best north and south road there is in Oklahoma being a distance of 115 miles to El Reno from Lawton, and 155 miles from El Reno to Wellington, Kans. You can secure running directions in the volume 5, Blue Book, from Ft. Worth to this point.

Traveling east through Winfield, Independence, Coffeyville, Chetopa, Baxter Springs, and Galena you reach Joplin, Mo. Your best road between Joplin and Springfield lies through Diamondville, Pierce City, Monett, Verona, Aurora, Marionville, and Billings.

PLANS CANADIAN TOUR

Trivoli, Ill.—Editor Motor Age—Please give me the routing from Peoria, Ill. to Winnipeg, Canada by way of St. Paul and Emerson, Canada.—E. G. Huffman.

Traveling westward out of Peoria and at Farmington diverging toward the northwest you will pass through Knoxville, Galesburg, and Swedonia, to Rock Island and Davenport. Your route out of Davenport will be over the River-to-River road to Iowa City where this highway intersects the St. Paul, Burlington and St. Louis road. From here you will have an almost direct route to the Twin Cities through Cedar Rapids, Vinton, Waterloo, Waverly, Charles City, Mitchell, St. Ansgar, Austin, Owatonna, Faribault and Rosemont. Continuing from Minneapolis your way will lie through the towns of Elk River, St. Cloud, Albany, Melrose, Sauk Center, Alexandria, Evansville, Fergus Falls, Rothsay and Barnesville to Fargo; turning more northerly at this point and running through Mapleton, Hillsboro, Reynolds and Merrifield to Grand Forks. Between here and Winnipeg the way places will be Minto, St. Thomas, Pembina, Emerson, Letellier, Morris and St. Norbert.

Or, instead of taking the River-to-River road out of Davenport, you might go north to Dubuque via Eldridge, Dewitt, Delmars, Maquoketa and Lamotte, then running west over the Hawkeye highway through Dyersville, Manchester and Independence reach the St. Paul, Burlington and St. Louis road at Waterloo. This route takes the motorist through hilly country but compensates with fine views of the Mississippi river.

There are fair to good roads most of the way with variety of scene, from the bluffs overlooking the Mississippi river, through the splendid parks of the Twin Cities to the rolling prairies of the north.

CONDITION OF TWO HISTORIC ROADS

The road signs committee of the Louisville Automobile Club has announced that signs will be placed on the two roads leading to Lincoln farm and to Seymour, Ind. Dr. R. R. Elmore, the secretary, and H. L. Ramsey, assistant secretary of the organization, have just returned from a trip to Lincoln farm via Bardstown and Buffalo, returing via Elizabethtown and West Point, a total distance of 130 miles, having made the journey for the purpose of securing the necessary information for having the signs painted. Another trip will be made to Seymour within a few days for the same purpose.

The scouts of the Louisville Automobile Club report that splendid results have been accomplished in the effort to rebuild the two historic highways to Lincoln's birthplace, but there remains much work to be done. Except for a few miles in Bullitt county which needs attention badly, the road from this city to Bardstown—the route of the central Lincoln road—is the good condition. From Bardstown to Athertonville, the road is fair, with 3 miles of perfect going just north of New Haven.

Continuing on to the top of Muldraugh hill, the pathfinder found the road badly washed and exposed in many places. From the top of the hill, famed because of its association with the James boys, to the Lincoln farm, 8 miles distant, there are two roads, one via Buffalo and another via Hodgenville. Both are partly piked and partly dirt roads, and in wet weather the clay in the dirt roads is very bad.

The Lincoln way via West Point is about 10 miles shorter than the central Lincoln road. In Jefferson county the Lincoln way has been built to within a short distance of Salt river and is only awaiting the completion of the bridge approach for it to be finished to the county line. When the bridge is completed there will be a perfect road from Louisville to the top of Muldraugh hill or nearly half the distance to the farm. And there is no road in the middle west that equals this one in scenic beauty. Muldraugh hill is between 3 and 4 miles in length and the grade is uniform. It has been pronounced a perfect feat of engineering; a car will cost the entire distance.

From the top of the hill to 2 miles south of Elizabethtown the road follows the old pike. On this 20 miles some resurfacing has been done, including about 6 miles near Elizabethtown and about 3 miles near Stithton, leaving about 11 miles of the pike yet to be repaired. Two rock crushers are at work on this section, taking the rock out of the roadside. Of the 12 miles nearest the farm, including Hodgenville, there is 8 miles of dirt road which in wet weather is almost bottomless, but part of this has been graded and is ready for metal. By September it should be nearly completed.

Of the 60 miles of the Lincoln way only the completion of the bridge at Salt river is needed to make 40 miles of good going in all weather and of the remainder, 10 miles always is passable at 10 miles per hour, but until the other 10 is completed it is well to avoid it in wet weather.

ILLINOIS TO NEW YORK

Lowpoint, Ill.—Editor Motor Age—I want to make a trip by motor car to Buffalo, N. Y., by way of Jamestown, N. Y., starting from Pontiac or Peoria. Would a return trip through Canada be advisable, and what are the condition of the roads?—A. D. Banta.

Go south to Chenoa, Lexington, Towanda, Normal, and Bloomington. Headed east a distance of 118 miles will find you in Lafayette, Ind., and will take you through Paxton, Hoopeston, Talbot, Boswell, Oxford, Otterbein, and Montmorenci. Good gravel roads prevail across Indiana, and a days run of 165 miles by way of Rossville, Geetingsville, Middlefork, Burlington, Kokomo, Sycamore, Swazee, Marion, Montpelier, Keystone, Petroleum, Domestic, Berne, Mercer, O., Mendon, Monticello, and Spencerville to Lima.

A day can be spent in reaching Cleveland, being an easy drive of 161 miles, routing through Beaver Dam, Bluffton, Mt. Cory, Findlay, Arcadia, Fostoria, Bascom, Tiffin, Green Springs, Clyde, Bellevue, Monroeville, Norwalk, Townsend, Wakeman, Kipton, Oberlin, Elyria, Rocky river, and Cleveland.

To make Jamestown, N. Y., the next night will give you a pleasant day's drive of 159 miles. Erie is 101 miles, but over a road on which fast time can be made by way of Wickliffe, Willoughby, Painesville, Madison, Unionville, Geneva, Ashtabula, Conneaut, West Springfield, and Girard. The Cleveland-Buffalo road is still followed 30 miles beyond Erie to Northeast, Ripley, N. Y., and Westfield then it is left and a southeasterly direction taken to Mayville, Hartfield, Point

FORT WORTH, TEX., TO SPRINGFIELD, MO.

Chautauqua, Dewittville, Bemus Point, Greenhurst and Jamestown.

Buffalo can be reached through South Stockton, Cassadaga, Lilly Dale, Laona, Fredonia, Silver Creek, Irving, and Buffalo, 71 miles.

There is no reason why you should not go through Canada. The river road is taken out of Buffalo for Tonawanda and Niagara Falls, a distance of 22 miles. Here an Ontario license must be taken out costing you $4 and a deposit of $10 placed with the customs house broker, half of which is returned to you when you re-enter the states. Hamilton, Ont., is 51 miles from the Falls, routing through St. Davids, St. Catherines, Jordan, Beamsville, Grimsby, and Stony Creek.

Port Huron, Mich., is a distance of 143 miles and can be made the next night with London, Ont., your noon control. You will travel through Ancaster, Brantford, Woodstock, Ingersoll, Thamesford, London, Hyde Park, Adelaide, Warwick, Kertch, Sarnia and Port Huron. A run of 61 miles takes you to Detroit over gravel roads through St. Clair, Muttonville, and Mount Clemens.

As you do not state that you desire to return by way of Chicago, and your shortest way lies to Ft. Wayne, we are giving you that routing. This is 173 miles and takes you out of Michigan in a southwesterly direction through Dearborn, Wayne, Belleville, Ypsilanti, Saline, Clinton, Tecumseh, Adrian, Madison, Jasper, Lyons, Winameg, Wauseon, Napoleon, Okalona, Defiance, Brunersburg, Hicksville, and Fort Wayne.

Fort Wayne to Lafayette is 134 miles over good gravel roads and by way of Huntington, Wabash, Peru, Logansport, Deer Creek, Camden, Delphi, Americus, and Buck Creek.

From Lafayette you cover the same ground the balance of the way to Pontiac and can follow out the directions outlined in the first paragraph in the reverse direction.

KOKOMO, IND., TO CANTON, O.

Kokomo, Ind.—Editor Motor Age—Please give me the best and shortest route from Kokomo, Ind. to Canton, O.—A. Kohl.

Your shortest route to Canton, O., will be via Sycamore, Swazee, Marion, Montpelier, Keystone, Petroleum, Mercer, Spencerville, Lima, Ada, Forest, Upper Sandusky, Bucyrus, Galion, Mansfield, Wooster, and Massillon. You will have good gravel or stone road over level country all the way to Mansfield. East of Mansfield you will find the country quite hilly, and the road mainly natural dirt and clay. The mileage of the trip will be about 275 miles.

MUNCIE, IND., TO DETROIT

Muncie, Ind.—Editor Motor Age—Please state in Motor Age the best route from Muncie, Ind., to Detroit, Mich., and give conditions of the road and naming the towns passed through.—F. E. Henderson.

Running north from Muncie, you should have good gravel road all the way to Fort Wayne via Fairview, Petroleum and Bluffton, the distance being a trifle over 70 miles. Bearing to the northeast from Fort Wayne, good gravel or macadam will be found practically all of the way to Napoleon, the wayside points being Maysville, Hicksville—19 miles beyond Hicksville watch for sharp right turn taking the first one to the left which leads through old Brunnersburg—Defiance, Okalona and Napoleon. At this point your mileage will be about 136 miles. Wauseon, Ottokee, Lyons, Jasper, Adrian, Tecumseh and Clinton will be reached over good gravel practically all the way in Indiana, and fairly good gravel the rest of the way to Clinton.

There is good road from Clinton to Ypsilanti. Less than a mile out from Ypsilanti look out for sharp left turn over railroad bridge and immediately turn right, the road lying straight through Wayne and Dearborn to Detroit. This is the regular routing, but at the present time one detour is necessary on account of construction work, directions for which will be found in this issue under Road Conditions. Otherwise this stretch of road will be found very good, as there are many miles of macadam road out from Detroit. The total distance will be about 245 miles.

ARKANSAS TO MISSOURI

Helena, Ark.—Editor Motor Age—I am planning a trip to Kansas City via Joplin and Nevada, Mo. Please advise if there is a booklet or pamphlet issued showing the most desirable routes on western trips. Any information will be appreciated.—W. E. McFarland.

You undoubtedly know the road to Clarendon, at which point the ferry has to be employed to Roe. Leaving Roe the main road northwest into Hazen is taken, a distance of 20 miles. Little Rock is reached through Hazen, Prairie Center, Lonoke and Galloway. To Hot Springs, 54 miles, the roads are pretty good, routing via Collegeville, Benton, Fairplay, Lonesdale, Epps. Routing via Abernathy's Springs, you arrive in Mena and continuing to Fort Smith through Foran Gap, Chant, Boles, Waldron, Mansfield, Huntington and Greenwood.

An option on the above between Little Rock and Fort Smith lies through Palarm, Conway, Wooster, Plumerville, Morrellton, Atkins, Pottsville, Russellville, Dardanelle, Paris and Charleston. Your noon control can be at Russellville or Dardanelle. You will find mostly ordinary roads, some hills and some bottom lands, but none very bad and some of it fine. The routing from Conway to Plumerville by way of Wooster is 8 or 10 miles longer but avoids the Caddo bottoms.

Fort Smith to Neosho is 146 miles and can be made in a day with noon stop at Fayetteville. Cross the river over a fine bridge to Vanburen, routing to Winslow through the great orchards and cotton country. The Boston mountains, where the only grade of any note on the whole route is found, are next crossed and Fayetteville reached. Headed for Neosho you will have some macadam, some solid flint hills and some plain dirt—no bad grades or bad streams, however. The distance is about 84 miles through Johnson, Springdale, Lowell, Rogers, Bentonville, Centerton, Hiawassa, Pineville, Neosho. This can be made a night stop or Carthage, which is 20 miles further, on a fine road.

The distance to Kansas City is 185 miles. Through Jasper, Boston, Lamar, Irwin and Milo to Nevada the road is part oiled and part macadam and continues 20 miles to Butler. Butler to

Adrian, Archie and Harrisonville is a 40-mile stretch of clay road; to Belton it is 18 miles on a good clay road, and on into Kansas City for 25 miles over a rock road.

The only rough road that will bother you any is from Fort Smith to Winslow and a little of the road from Fort Smith to Little Rock.

As far as Motor Age knows, this section is not covered with running directions with the exception of the stretch from Clarendon to Little Rock, which is only a distance of 69 miles, and the 54-mile run to Hot Springs if you want to go that way. This is contained in the Blue Book, volume 5, and sells for $2.50. Inquiry will have to be made in every town for routing to the next. Motor car agents, repairmen or the hotels will give you the most authentic guidance.

HANOVER, ILL., HIS DESTINATION

Conrad, Ia.—Editor Motor Age—I wish to make a motor trip to Hanover, Ill., and would like to have the route outlined. I expect to start the last week in July and prefer passing through Cedar Rapids, Dubuque, and touch Galena. Which volume of the Blue Book describes the Iowa routes?—John Lister.

By going to Marshalltown you reach the official transcontinental route through Iowa and follow it to Cedar Rapids, a distance of 76 miles, through Montour, Tama, Belle Plaine, and 69 miles further through Marion, Mt. Vernon, Mechanicsville, Stanwood, Clarence, Lowden, Wheatland, Grand Mound, and DeWitt. You will have excellent views of the Missisippi river en route for Delmars, Maquoketa, Fulton, Lamotte, to Dubuque. Hanover is not far from Galena. Volume 5 Blue Book covers your routing in Iowa but does not deal with the territory east of the river except a few through routes to Chicago.

Blue Book Reports on Condition of Western Touring Routes

THE Blue Book car covering the central states just returned from a 10-day trip in Wisconsin and its crew has the following to report:

On the shore route to Milwaukee conditions to Waukegan are very fair, with only a few rough spots, most of which are being repaired. From Waukegan to Racine a great deal of sand is reported, with conditions as bad as they have been at any time during the last 3 years. One of the inside routes between Chicago and Milwaukee is recommended.

Milwaukee to Fond du Lac via Menominee Falls. With the exception of a new exit out of Milwaukee via Fond du Lac avenue, the general directions on this route remain the same. Road conditions are reported to be regular gravel practically all the way.

The shore route between Fond du Lac and Oshkosh is by all means the preferable one both because of road conditions and on account of its following quite closely the shore of Lake Winnebago.

Oshkosh to Shawano—The first part of the route is identical with the route through Stevens Point, leaving same at Medina, going northwest to New London and then to Shawano. As far as New London roads are mostly gravel and in fairly good shape. From there on rather poor, with considerable sand and some rough spots.

Green Bay to Wausau via Shawano—On the first part to Shawano roads generally are good, with the exception of some rather heavy sand in spots, also the remains of an old plank road for one or two short stretches. From Shawano to Wausau there is considerable sand and some rough places. The road is narrow and winding through timber, where caution must be used on sharp turns for a considerable part of the distance.

Wausau to Merrill and return—There are two different routes, both generally good but dusty, the western route being the better and shorter. It is reported that the road to Rhinelander and Eagle river is passable, but there are pretty poor road conditions with considerable sand all the way.

Wausau to Stevens Point—This is a mixture of excellent gravel with a few stretches of sand; however, these places are rapidly being improved.

Stevens Point to Oshkosh—Road conditions are practically the same as route from Wausau to Stevens Point, the first few miles out of the latter town having considerable sand with gravel practically all the way from Waupaca.

Oshkosh to Ripon—The roads are dusty, with very little sand; otherwise good.

Ripon to Green Lake and return—The regular Blue Book route was found to be the best. It is impossible to make a trip around Green Lake, due to heavy sand.

Ripon to Waupun—Fine gravel all the way.

Waupun to Kilbourn via Fox Lake and Portage—The first part to Portage there are fairly good roads all the way. From Portage to Kilbourn it is rather poor, with considerable sand.

Kilbourn to Reedsburg via Delton—This makes a direct connection from The Dells to the Madison-La Crosse route, which will enable people making the trip between these two latter cities to visit The Dells without going up from Baraboo and returning on the same road. Some spots on this short trip need improvement, but this is being rapidly taken care of.

Kilbourn to Baraboo—Practically all macadam or gravel, one or two short stretches being completed this summer.

Baraboo to Portage—Only fair but better than the Kilbourn-Portage connection. Tourists are advised in making the trip to Portage and east from Kilbourn to go via Baraboo under present conditions.

Portage to Madison—Generally good, only a little sand, the last half of the route being particularly good.

Madison to Freeport, via Monroe—The first part of this route is identical with the present routing to Evansville, where it branches to the southwest for Monroe, then almost straight south into Freeport. It is gravel most of the way to Evansville, with generally good dirt and some gravel the rest of the way, although quite hilly most of the distance between Evansville and Freeport.

Freeport to Rockford—This route was found to be in better shape than last year and the only feasible one between these two cities.

Rockford to Elgin via Cherry Valley—This is a new route. Leaving Blue Book route just south of Belvidere, keep straight east instead of turning north into the latter town following. There is gravel on the direct road through Genoa and Pingree Grove, coming into Elgin on the south leg of the Elgin race course.

Elgin to Chicago on what is known as the Chicago avenue route—Gravel or macadam all the way, in generally good condition.

Chicago to South Bend—Due to construction of new railroad bridge and road improvement between Highland and Hobart, those desiring to go to South Bend via Valparaiso and Laporte are recommended to follow route 51 to Valparaiso. It is possible to follow route 1 to the first left-hand road just after passing through Hessville, where turn left about 2 miles, then south, meeting the Hobart road again, but due to road improvements east of this point another slight detour must be made, and the above recommendation of route 51 is considered best. It also is necessary at Laporte to make a detour between this city and South Bend, as this part of the road will be closed for some weeks. The Blue Book car went via Stilwell, going southeast out of Laporte on Monroe street, crossing the river at Stilwell, following the heavy telephone line direct into South Bend. Some dirt road but a good route in dry weather.

Chicago to South Bend via Michigan City is reported in good condition, particularly to Rolling Prairie, where the macadam ends. From here on there are a few short stretches of soft gravel, but same are not bad.

South Bend to Muskegon—Fairly good to St. Joe, with gravel to Niles, a few sandy spots to Arden, then macadam. After leaving St. Joe there is considerable sand, with some rough stretches. They are just commencing to gravel the roads in this section and it is hoped that considerable improvement will be made by next summer.

A new route from Holland to Kalamazoo gives good roads with considerable gravel especially between Alleghan and Kalamazoo.

Holland to Zeeland and Grand Rapids was found to be the best between these two cities, and roads practically all the way are gravel and in good shape.

Grand Rapids to Traverse City. Grand Rapids to Big Rapids is good with the exception of last 10 miles, which are rather rough and sandy in spots. Big Rapids to Reed City is good all the way, but from Reed City to Tustin the roads are hilly and sandy, with some clay on hills and some very rough spots. From Cadillac north, conditions are much better, with considerable macadam. There is no sand of any consequence.

General road conditions north of Muskegon and Grand Rapids are as bad as they have been in 2 or 3 years. Of course where road improvements have been put in conditions are excellent, but the sandy stretches almost spoil the general effect over a large number of routes. The sand probably is especially bad this summer, due to the excessive dry spell after a wet spring.

Cadillac to Manistee—The people in Cadillac advise that on the Cadillac-Manistee route it is perfectly feasible to go straight across country but although the first part of the way is not bad the last half is winding through woods over some bad sand hills and tourists are advised to go north from Cadillac to Sherman, then across to Copemish and south into Manistee. They now are working on this stretch and it is promised that improvements will put it in fairly good shape with considerable gravel for next year.

Manistee to Traverse City via Arcadia and Frankfort is fairly good going to Frankfort but practically impossible to go farther north. The Blue Book car made a connection direct from Frankfort to Traverse City via Benzonia and Grawn. This is a feasible route which is being worked on and which will be finished for 1913, it is claimed.

Thomas H. MacDonald, highway engineer for Iowa, reports that there is considerable improvement being made on the official transcontinental road as it passes through the Iowa state college grounds at Ames. None of the roads is closed, but due to grading and new material being put on they will be rather rough for a short time. Due to a new bridge which is being built over the Raccoon River just west of Jefferson it is necessary to go around on a temporary bridge, which should be taken at slow speed with careful driving. When completed the new bridge will be one of the finest of its kind in the state.

Port Huron to Detroit is a mixture of some excellent roads with a few poor stretches. The regular Blue Book route as far as St. Clair is all right. At this point a new route was taken via Marine City, Anchorville and New Baltimore which is good to Marine City and fair to Mt. Clemens, a little sand and some clay. Road through Mt. Clemens is pretty bad until you meet the new concrete macadam on Gratiot avenue.

The route between Detroit and Ann Arbor is being put in excellent shape, as the new concrete macadam, which will all be completed this summer, reaches nearly to Ypsilanti and the road from there to Ann Arbor is fine gravel. There is one detour, however, still necessary between Detroit and Ypsilanti. Nine miles out of Detroit turn right on a clay road for nearly 2 miles, where turn sharp left, crossing a small iron bridge; go 1.2 miles and turn left,, meeting the regular route again at the Sanitarium, where right turn is made for Ypsilanti. Straight route through here will not be open until November.

Ann Arbor to Brighton is a very useful short connection between the two main east and west routes across southern Michigan. The road passes close to Whitmore Lake, to which point it is good gravel. The rest of the way there is a little sand but considerably more gravel.

New Hudson to Pontiac and Mt. Clemens is good to Orchard Lake and excellent from there to Pontiac on fine macadam. This short stretch is quite a scenic one. From Pontiac east the road is fine to Utica, and almost as good from there on via Frazier.

Colonel Buffum, the good roads man of Missouri, advises that, due to the hills and generally bad condition of the road between Rennick and Armstrong on the Mexico-Marshall route, it is advisable to go northwest from Rennick 7 miles to Moberly; from here west to Huntsville 6.8 miles, then south to Mt. Airy, 6.1 miles from Huntsville, continuing south to Roanoke 5.5 miles and turn west, meeting Blue Book route, into Armstrong. This option is less than 4 miles longer than the route through Higbee.

Number of Speed Changes

Engineer of National Factory Holds Four Speeds Necessary Only If Car Underpowered

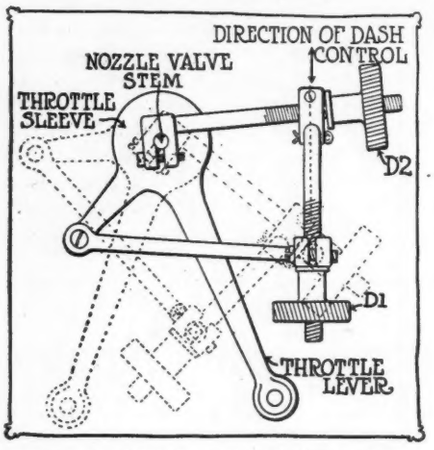


FIG. 1—CHADWICK THROTTLE LEVERS

INDIANAPOLIS, Ind.—Editor Motor Age—I note with considerable interest an article in one of the recent issues of Motor Age, claiming the four-speed gearset was the proper one to use and had a great many advantages over the three-speed. I can readily see, assuming the same premises, that without carefully reasoning, this conclusion might be reached.

Assuming that all cars were very much under-powered, this conclusion might not be far off. This certainly is not the case, however, in this country. I believe that the American public does not care, as a rule, to work its passage in driving a car, and the less gear-changing necessary the better. What one desires in a car besides comfort is quiet running and simplicity. Quiet running can be best secured by using direct drive. Simplicity is approached the nearer by using as few a number of gear changes as possible.

For a car very much underpowered a four-speed gearset might have some advantages, provided the driver was willing to be continually changing his gears. A car of the proper proportion of power to weight should be able to go over most roads on direct drive, having an engine flexible enough and with sufficient power to throttle down to low speed and at the same time prevent stalling. The way to view the matter is to consider the gearbox as an undesirable but necessary adjunct of the hydrocarbon engine. If the engine was a perfect source of power, the gearset could be done away with entirely. As this is not the case, it is necessary to use certain gear reductions, which causes the necessity of the gearset. The simpler this gearset can be made the better. Also the greater the amount of time the direct drive in this gearset can be used the greater its efficiency, whereas the engine efficiency does not vary a great deal except at low speeds. If the three-speed gear box is made with anything like the correct proportion of gears, it is as flexible as can be desired and I believe the correct proportion runs something as follows: The rear axle gearing, of course, could be anything desired; assuming in this instance it was 3 to 1 would give

	Gear box	Engine to wheels
Third or direct drive	1 to 1	3 to 1
Second or intermediate	1.6 to 1	4.8 to 1
First or low	3.25 to 1	9.75 to 1
Reverse	4.5 to 1	13.5 to 1

You can see from this that the intermediate speed is sufficiently high so that good results and a very fair road speed can be gotten, especially for grade-climbing by the use of this, whereas for extremely hard pulling, the low speed would come in use as would be the case with the four-speed gearset. Of course, the size of the engine in proportion to the weight of car has to be considered to a certain extent. An engine of the proper size for the car does not necessarily mean a large engine. It simply means that the designer must have done his work well in proportioning the parts.

In certain countries abroad where a tax is levied on the horsepower of an engine there necessarily is some reason for keeping down the horsepower, although they are going to extremes in this matter, which the motor car users of this country would hardly put up with. In fact, I have ridden in good makes of cars abroad, where it was necessary even on good roads to shift gears from high speed on grades not much over 2 per cent. Of course, if you are determined that your chauffeur shall earn every last penny of his wages a four-speed gearset is an excellent device, provided you make him use all the speeds, and why have speeds unless you expect to use them?

Most drivers seldom use more than two of their speeds, whether they have a three or a four-speed gearset. The slide-gear transmission is a very poor proposition and considerable of a makeshift from a mechanical standpoint. Why complicate and add more weight to it and render it more liable to get out of order?

The American public does not wish to be continually changing gears, which is proven by the fact that each year the manufacturers of cars increase slightly the sizes of their engines. This is not so much to secure greater speed as it is to secure ease in hill-climbing and the elimination of the necessity of changing gears.—William G. Wall, National Motor Vehicle Co.

The Readers'

Change-Speed Gear Design Under Discussion—Cameron's Communication on Four Versus Three Speeds Cause of Comment from Engineers—Divergent Opinions

Pound Is a Good Sign

If Impossible to Get Knock With Full Load, Timing Is Wrong Magneto Adjustment

KENNEDY, MINN.—Editor Motor Age—I have read carefully the article on "The Theory of Spark Advance" in the June 13 issue, page 31, of Motor Age. I have a model 10 Buick, equipped with a type L Remy magneto, and would greatly appreciate some information in regard to the ignition and carburation. On the Remy there is a stop on the timer so it cannot be worked beyond a certain limit. On a late spark I set it to ignite on center and there get a good spark but as it is advanced the spark grows weaker and at the extreme limit there is no spark at all. Now it must be that the armature is not in the right position to cut sufficient lines of force; but what has changed it? The cam in the breaker-box is keyed to the armature shaft so this ought not to exist, the magneto cannot be weak as it produces, on retard, a spark ⅜-inch to ½-inch long.

2.—In this same article it states to advance the spark until it nearly pounds in the motor, I can advance it, on battery ignition, to the limit without pounding. Is this on account of a slow-burning mixture?

1.—Your trouble is with the adjustment of the platinum points. In Fig. 3 is shown a diagram of the Remy breaker-box as applied to a model L. With the cam in the position shown, there should be 1-32-inch clearance at A between the short breaker arm and the flat spring. This adjustment is made by pressing in the phosphor bronze spring and turning the hard rubber adjusting screw R to the right. The reason for your lack of spark at advanced positions is that, owing to the platinum point, P, being worn, the breaker arm B breaks its contact with the spring, S too soon, so that no current is generated. If this does not suffice, the cam is worn, and should be replaced.

2—If you cannot get a pound with spark fully advanced, and under heavy load, as on a hill, your spark timing is too late. With retard on center, or just a shade after, you should have sufficient advance to make the motor pound even without a load, although in active running so much advance is unnecessary.

Clearing House

Fergusson Comes to Defense of Michigan Factory Man on Transmission Questions—Methods and Plant for Enamelling Lamps—Side Swing in Underslung

Enamelling Brass Lamps

Best Methods of Applying Permanent Coating Outlined for Hoosier

INDIANAPOLIS, Ind.—Editor Motor Age—Being desirous of engaging in the business of enameling brass lamps for my customers, I would appreciate a brief outline, through the columns of the Reader's Clearing House, of the machinery necessary for this work, and the method of procedure.—F. M. Leary.

The machinery required is one or more high-speed buffing stocks, the number depending upon the amount of work to be done, and the number of men to use them. The balance of the equipment consists of an oven, a size of 7 feet high, 6 feet long, and 6 feet wide, being adapted to all average uses. It should be made of sheet steel, and covered 1 inch thick with asbestos. This oven is fitted with four or five steel racks or shelves on the interior, and a well-fitting heat-tight door. A thermometer is encased on the outside, having connection with the interior through an iron tube. The oven may be heated with steam, electricity, or gas, and should be kept at about 200 degrees temperature. Such an oven can be built for about $60, and a gas burner that has been found very satisfactory can be purchased of the Fowler Lamp Mfg. Co. of Chicago for $20. This burner is composed of two iron pipes, with opposing slots, which act as jets, the large diameter of the pipes in conjunction with the blast induced by the rush of gas through the apertures make a very hot blaze with good economy.

The process is as follows: The doors and all free parts of the lamps are first removed, the lens-mirrors or silver reflectors being left in the lamps, as the heat of the oven is not sufficient to injure these parts. All parts to be finished bright are buffed and colored on the buffing wheel, while the parts to be enameled are roughened on a scratch-press wheel, operated at approximately 2,200 revolutions per minute, and then wiped with benzine on a soft cloth, care being taken not to touch any of the surfaces with the fingers, as spots so blemished will blister in baking.

The first application of enamel is then applied with a ¾-inch flat badger's hair brush, the lamp being placed in the oven for from 1½ to 2 hours. Some jobs require two coats and some three, the enamel recommended being the Chicago Varnish Co's. Rubber Finish baking enamel, which comes in large tins, ready to use. The first application always is dull finish, while the final coat may be either of dull or luster finish, according to the tastes of the customer. The enamel is baked after each application, and considerable skill is required to apply the enamel.

Large surfaces are best enameled one at a time, being kept horizontal, as otherwise the enamel will run on the vertical faces, and produce an uneven surface. Electric lamps, speedometers, and electric signals all must have wiring, celluloid, rubber, and composition parts removed before baking. Solder, however, is not affected by the temperature of the oven. The heads of the lamps and the oil pots should not be enameled, as the heat will cause the enamel to blister, and the kerosene will cut it. In buffing and coloring the bright parts, Tripoli buffing composition should be applied to the buffing wheels for cleaning.

Other methods than the one outlined have been tried. Dipping is used to some extent, but owing to the uneven surface it produces and the fact that all interior parts must be removed to prevent them being covered with the enamel, this is not to be recommended. Its durability is also very inferior. The sand blast method of scratching also has been experimented with, but with ill success, as the sand will remain in the crevices in spite of all precautions, and sift on to the enamel. The spray method of applying the enamel is economical only when done on a large scale, and the result is superior to the method described only in points of economy. Some manufacturers using the method described find that they can guarantee their work for 1 year against the action of the sun, checking and blistering.

CARBURETER ADJUSTMENT SAME

Powder Springs, Ga.—Editor Motor Age—Tell me how to adjust the Schebler model L carbureter. This information was given in a former issue of Motor Age but it was for the Cadillac car with new electric lighting and starting device. Will these adjustments hold good for this carbureter on a Maxwell Mascotte car?—S. E. Smith.

Yes; the adjustment of the carbureter on the Cadillac car is applicable to the carbureter on the Maxwell Mascotte car.

In Favor of Four Speeds

Pierce-Arrow Expert Agrees with Engineer Cameron in Design—Ability of Extra Ratio

BUFFALO, N. Y.—Editor Motor Age—I quite agree with W. H. Cameron in regard to the desirability of a four-speed forward gear box on all touring cars, except, perhaps, the very smallest powered cars. I am altogether in favor of direct drive on fourth speed. I favor a lower third speed gear ratio than Mr. Cameron advises, the other gear ratios are about the same as those used by the Pierce-Arrow car, which in the case of the 36-horsepower car has the following gear ratio:

Speed	Transmission ratios	Ratio Engine to wheels
4	1 to 1	3.5
3	1.63 to 1	5.7
2	2.22 to 1	7.77
1	3.88 to 1	13.58
Reverse	4.66 to 1	16.31

I consider that in order to get the full benefit from a four-speed gear, the third speed must be low, as the ordinary driver will, as a rule, keep on the direct when climbing a hill as long as possible, the engine will then have slowed down so much that by the time the driver has changed to third speed he will find the car speed so slow that the engine will not pick up speed, with the result that he either will stall the engine or he will have to make a quick change into second. This detracts from the value of a four-speed gear, and he will find that there are very few hills that he fails to get up on the direct, that he will be able to make on the third, unless he changed to the third while the car is still going along at a good rate of speed on the fourth.

This is especially true in the case of heavy, powerful cars as almost all drivers endeavor to make a hill on the direct drive and they delay changing gears until the last moment. With a properly proportioned four-speed gearbox the driver can

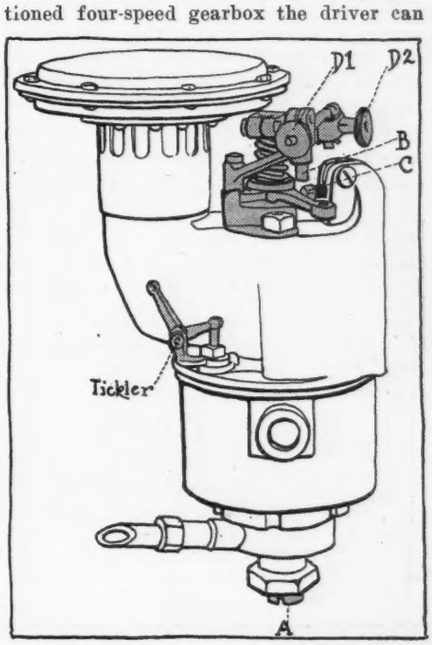


FIG. 2—CHADWICK ADJUSTMENTS

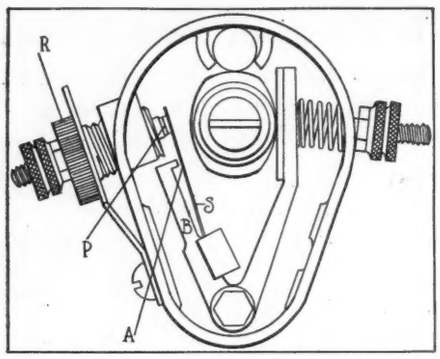


FIG. 3—REMY BREAKER MECHANISM

mount almost all ordinary grades on the third speed. He will be able to take these at a good rate of speed without racing or overheating the engine, which he most probably would do if he only had a three-speed gearbox and had to take these grades on the second speed.—D. Fergusson, Pierce-Arrow Motor Car Co.

TOO RICH MIXTURE

Hope, Ark.—Editor Motor Age—What causes a motor to fail to start after being stopped a short time when the carbureter seems to work well and there is a hot spark? After being cranked awhile then left standing a few minutes it will start. I have noticed this same trouble in other cars but on opening the relief cocks and spinning the motor it will start at once; but as my car has no relief cocks I am at a loss to know how to start it. The car, a model 21 Buick, came equipped with a model D Schebler carbureter which the agent changed to a model L. Why this was done I do not know as the model D worked well. With the carbureter adjusted as closely as possible it overheats, boiling the water on a 1-mile run on the high speed.

2—Does Motor Age think the change of carbureters has anything to do with this and the failure to start.—A Subscriber.

1—Improper carbureter adjustment probably is the cause of the hard starting. The low-speed adjustment does not give enough air. Weaken the mixture on low-speeds.

2—If properly adjusted the model L should work better than the model D.

Two-Stroke Spark on Four-Cycle Motor

Operating Principle of Starter Explained for Nebraskan—Anti-Freezing Solution for Gas Generator

LINCOLN, NEB.—How long has the Nyberg Auto Works been established?

2—How does the Disco self-starter work? How does it differ from the one made by the Prest-O-Lite Co.?

3—When one quickly closes the throttle preparatory to coasting, why does the engine often begin a series of small explosions, or popping? How can this be prevented?

4—How does the Remy two-cylinder opposed ignition system work without a distributor. I have heard a spark takes place in both cylinders at the same time, one being on the exhaust stroke and having no effect.

5—If the above is true, why will not the ordinary timer and a single vibrating coil work the same way? I have tried the same on a 5 by 5-inch two-cylinder opposed motor, but only succeeded in making one cylinder work.

6—In a two-cylinder opposed motor with common timer and double vibrating coil of two units, cannot one unit be used as a master vibrator, a spark taking place in the one cylinder once every revolution of the flywheel, the other cylinder working as usual?

7—Does Motor Age know of any schools which give a good technical education fitting one to be a good motor car mechanical engineer?

8—How should the carbureter on a 1910 Chadwick six be adjusted? When this machine is in good condition what speed should it obtain on the fourth speed? What are the gear ratios on this car?

9—When a car has seventeen teeth in the pinion gear and fifty-three in the bevel, what ratio has it, 3 to 1 or 3 2/17 to 1?

10—What can one use in an acetylene generator in the wintertime to make gas and yet not freeze?—A Subscriber.

1—The Nyberg Auto Works is 11 years old, and has manufactured cars for 2 years.

2—The Disco self-starter consists of a rotary distributor, which is connected to the gas tank by a supply pipe, and has a lead to each cylinder for the injection of gas through an injector plug. This distributor consists of a rotary valve having one inlet and four outlets. It operates with a small crank on the dash. A turn of this crank admits the gas under pressure from the tank to each cylinder. The engine then is started on the spark, the acetylene gas furnishing the explosive element for the initial explosions, warming the motor, and drawing in the charge of gas from the carbureter for running. The Disco differs from the Prest-O-starter in the form of its distributor and in the fact that it operates at gas-tank pressure, while the Prest-O-starter is attached to the tank through an automatic reducer valve that maintains a uniform low pressure of 2 ounces in the supply valve. In the latter appliance, the operation is somewhat different from that of the Disco; a pressure pump which is operated by a handle on the dash, taking the place of the distributor. This is pulled toward the operator to take in a charge of gas at 2 ounces pressure, and pushed back to compress this charge and force it simultaneously into all of the cylinders.

3—This phenomena is what is known as muffler explosion. It is caused by the admission of raw gas into the red-hot muffler. In shutting off the throttle suddenly with the motor running at high speed, a very rich vapor which is not ignited in the cylinder, owing to lack of sufficient air, is drawn past the throttle. This fresh gas is projected into the hot exhaust manifold and muffler, which are usually lined with red-hot carbon, and is violently exploded. This can be prevented by a little care in handling the throttle. Muffler explosions are caused by cutting out the spark with the throttle open. This lets a fresh charge into the hot muffler and results in similar ex-

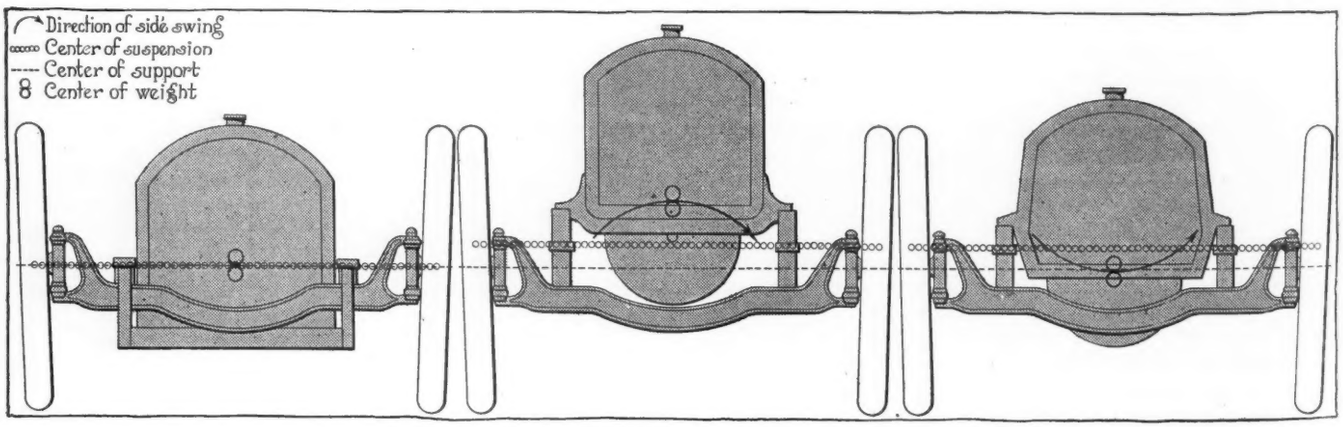


FIG. 4—THREE MODES OF SUSPENSION SHOWING RELATIVE STABILITY

Cause of Underslung Stability Asked

Low Center of Weight Alone Does Not Solve Problem—Chadwick Carbureter Adjustments

plosions. Both are preventable with proper handling of the controls.

4—In a two-cylinder, four-cycle motor, a single-contact distributor may be used to ignite both cylinders, by running it at crankshaft speed, timing the spark to occur simultaneously in both cylinders, each alternate spark in a given cylinder, occurring on the exhaust stroke. See Fig. 6.

5—An ordinary timer runs at half time, camshaft speed and if wired to but one contact, a spark would occur only on the working stroke of one cylinder, and on the exhaust stroke of the other, the latter thereby being cut out of ignition. See Fig. 6.

6—For the same reason as above, with an ordinary timer, on the half-time shaft, a spark would not occur in either cylinder oftener than once every other revolution.

7—Armour institute, of Chicago, gives a good course in mechanical engineering, which is supplemented with a special motor engineering course. Correspondence schools, such as the International Correspondence Schools, of Scranton, Pa., and the American School of Correspondence, Chicago, include special motor car courses in their corricula.

A special motoring school is the Chicago School of Motoring, Chicago.

8—The Chadwick 1910 carbureter, which is manufactured by the Chadwick Engineering Co., has four adjustments, viz.—the needle valve, the dash adjustment, the throttle stop, and the adjustments of the synchronous nozzle valve and throttle controls. In Fig. 2 is a sketch showing these adjustments, in which A is the needle valve adjustment. No attention need be given this adjustment, after once set, as with the metal float used, the level once set is permanent and may be observed in a small window in the side. B is the fulcrum, to which the dash adjusting control is attached. This adjustment is for the purpose of raising or lowering the needle valve of the nozzle, independent of its movement as governed by the throttle. It operates direct on the projecting stem of a screw plug which is connected to the needle valve, and raises or lowers the latter as it turns.

The throttle stop C limits the degree of opening of the throttle, and consists of the usual slotted and threaded lug, in which the stop screw is screwed, and a binding screw to clamp the two sides of the slotted lug together, when the adjustment is set. D-1 and D-2 are the adjusting nuts of the syncronizing throttle and nozzle control levers. These levers number three, the first being clamped to the stem of the nozzle valve, and connected to the third by a second. The third is screwed to a bell crank which is part of the throttle lever.

In operation, the opening of the throttle, from right to left, turns the nozzle valve stem by means of these levers, raising the needle and admitting more gasoline in proportion to the opening of the throttle. Adjustment of these levers is for the purpose of varying the proportions of gasoline and air at any given speed, and to govern the rate of opening of the needle valve of the nozzle, in proportion to the movement of the throttle. Turning D-2 to the right increases the range of opening of this valve, and to the left, decreases it. Turning D-1 to the right or left varies the degree of opening in proportion to throttling.

The plan of these levers may be studied in Fig. 1, which illustrates the manner in which the dash adjustment is accomplished with the same levers without any effect on the throttle. To secure a richer mixture on high speeds and a leaner one on lower speeds, turn nut D-1 to the right. To secure the opposite adjustment, turn it to the left. To enrich the mixture on all speeds, turn nut D-2 to the right, and to cut down on all speeds, turn it to the left. Experience will show that adjustments must be made in conjunction with one another. For ordinary work, this adjustment should be made with the dash control in a neutral position, so as to allow instant dash adjustment in either direction.

Chadwick touring cars have made as high as 74 miles per hour on top speed, it is claimed. Chadwick gearing is optional.

9—The correct ratio of 17:53 is 3:1176+, which is approximately 3⅛.

10—Alcohol and water will be found satisfactory as a non-freezing solution for use in gas generators.

UNDERSLUNG SIDE-SWING

Hannibal, Mo.—Editor Motor Age—Will Motor Age kindly advise me if a car with an underslung frame has less side-swing and steers easier when running rapidly than drop frame cars?—C. A. Trowbridge.

The underslung frame is credited with having less side-swing, all other things being equal, than an overhung, even though the latter frame be considerably dropped. This is due to the fact that the center of weight, in the best examples of underslung practice, is practically at the same height as the spindles of the wheels, hence the centrifugal strain exerted in rounding corners, etc., is applied equally on both wheels, the strain on the springs being lateral, and about even; hence there is no give, and the body is held practically rigid against all lateral motion.

The overhung frame carries its center of weight higher than the underslung, hence centrifugal strain is exerted above the spindles, unevenly on the wheels, and vertically on the springs, which are flexible in this direction, and give to the pressure of the body, causing side-swing. Even though the center of weight of the overhung by means of excessive drop, were brought as low as that of the underslung, its high suspension would induce

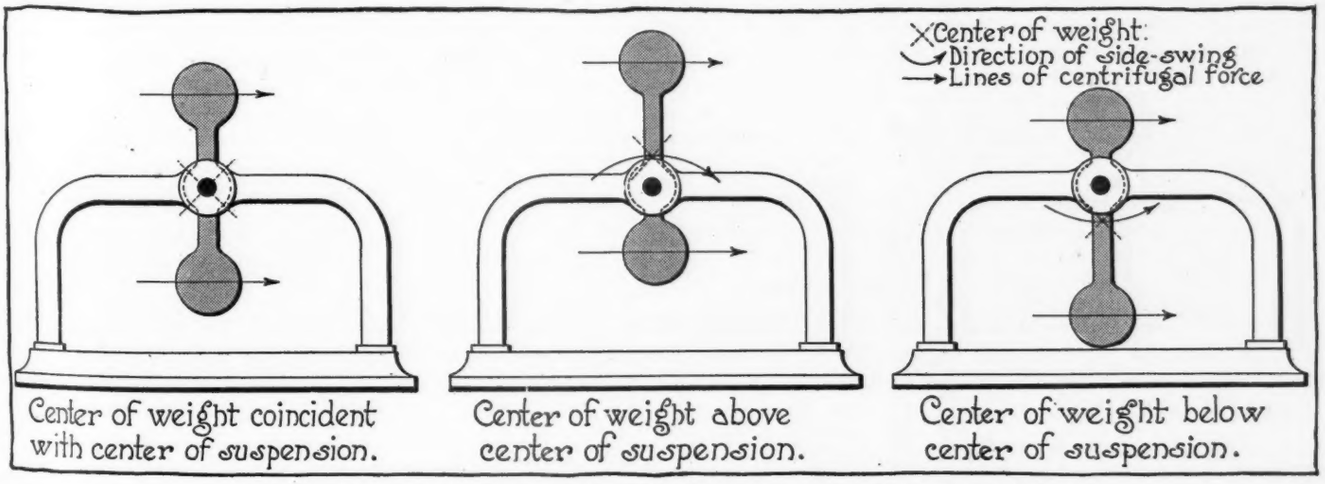

Center of weight
Direction of side-swing
Lines of centrifugal force
Center of weight coincident with center of suspension.
Center of weight above center of suspension.
Center of weight below center of suspension.

FIG. 5—PRINCIPLES OF SUSPENSION ILLUSTRATED BY PIVOTED DUAL PENDULUMS

side-swing. In Fig. 5 is shown a double pendulum in three positions, representing this principle: A representing the underslung principle, B the overhung with high center of weight, and C the overhung drop-frame suspension with low center of weight. The identity of this principle in its application to motor car suspension is clearly shown in Fig. 4.

The uniform pressure on the wheels,

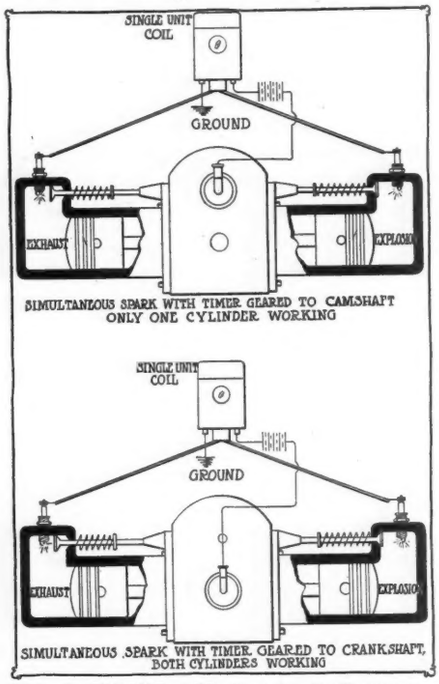


FIG. 6—WRONG AND RIGHT METHOD OF TIMING FOR SIMULTANEOUS SPARK

which is a feature of underslung construction, is the result of the coincidence of the center of weight, the center of support and the center of suspension. The uneven pressure on the wheels of an overhung car is the result of differentiation between these centers. It follows that with this uneven pressure, the wheels of an overhung vehicle would steer less easily at speed, when the tendency to side-swing is greatest.

HENDERSON LIGHTING SYSTEM

Omaha, Neb.—Editor Motor Age—I understand that the Ward-Leonard lighting system, as applied to the new Henderson product, depends upon the batteries to light the car at night, charging only during the day. If this is true, owners whose driving is principally after sunset, would find the charging generator of little use. —Night Rider.

At speeds below 12 miles per hour, there is no output from the Ward-Leonard generator; at 12½ miles per hour it will take the entire side and tail lamp load, and at 17½ miles, will take the entire lighting load. This is shown fully in the accompanying chart, Fig. 7, which was plotted from tests conducted by the Henderson engineering department.

If the car were run with all lamps lit, an average speed of 17½ miles per hour would keep the batteries fully charged at all times. If the average speed were less than this, they would require occasional recharging, although if this average did not fall below 12½ miles, such recharges would be extremely infrequent, as only sufficient discharge to light the headlights would be sustained in excess of the recharge from the dynamo.

This condition would not be likely to occur with even the slowest of night drivers, and would in all likelihood, be made up for by the moments of idle running, when the entire output of the motor would be absorbed by the batteries. The average driver, however, drives at a much greater

Duryea Cites Two-Cycle Efficiency

Maker of Buggyaut Defends Position on Power and Fuel Economy of Two-Stroke Design

SAGINAW, MICH.—Editor Motor Age—Mr. Sheehy's remarks on the two-cycle motor in the last issue of Motor Age are noted. I regret to disagree with him, but the two-cycle engine is too good a device to be ignored by motor car makers and users, so perhaps a few further remarks will be of interest to the readers of Motor Age.

My previous article tried to make it plain that the two-cycle does not draw in twice as much fuel as the four-cycle and so cannot be expected to give twice as much power. Any one can see that the crankcase of an engine cannot be as good for pumping in the new charge as is the cylinder of the four-cycle during its non-working stroke and that even this is not a real good pump as is shown by the fact that it never gets properly filled at high speeds.

This one fact alone is mostly responsible for the difference between the two types of engines. When the two-cycle runs slowly it pumps nearly full charges and develops better power than most four-cycle engines of twice that number of cylinders. This because it has less internal friction. It will hand to its job and not lie down as many four-cycle engines do. But at speed it does not get full charges and so cannot develop anywhere near double power. On this account the statements of Mr. Sheehy as to high speeds are largely true. But evidently he has something to learn about two-cycle speeds, however, or he would not claim that it is "not impractical to run them much above 1500." Our engines test up to 1,200 to 1,500 before reaching their maximum power point and they decrease slowly above that. They will turn above 2,000 while pushing a rig at high gear along the road and can be easily tuned to run much faster than this, but we have no need for such speeds with solid-tired vehicles and so we design for lower speeds rather than for higher ones. We are certain there is no difficulty in running our engines up to 3,000 if we had need for them to operate at such speed. We are a little proud of this fact, for we use a check valve into the crankcase, and check valves are supposed to slow the speed of a two-cycle, but we stand ready to produce the engine whenever there is any occasion or demand for it evidenced.

Mr. Sheehy also is wrong in the matter of cooling, and evidently does not speak from a proper experience. I once held the same belief, but several years marketing an air-cooled two-cycle, built with the same cooling system that I formerly built on four-cycles, has convinced me that the two-cycle does really cool easier than the four-cycle, and the only explanation I have been able to find is the one given in my letter of May 23. I will enlarge on this slightly for a better understanding.

Assuming that the ignition begins at dead center, although in many cases the heat has not developed nor the pressure risen until somewhat later, it is evident that the walls are exposed to heat for only about 120 degrees, because the average two-cycle opens its exhaust earlier than does the four-cycle—we open our exhaust somewhat later than this because we are building for pulling and not for speed, having more speed than we need already. This means that the wall is exposed to the heat for 120 degrees and the inlet opens admitting cool gas within another 15 or 20 degrees, during which time the exhaust gases have completely escaped through the extra large opening provided by the piston opened ports. The four-cycle people are considering sleeve valves, rotary valves, and other means of getting this perfect port action, which in itself is a large cooling feature. It is likely, therefore, that the average heating time is not more than 130 degrees, while in the four-cycle the exhaust opens at 40 or 45 degrees ahead of dead center, so that the intense heat of the charge is against the wall for 135 to 140 degrees, followed by a somewhat less intense heat until the end of the exhaust stroke, 220 or 225 degrees further, or a total of 360 or 365 degrees. It will thus be seen that this time of exposure to the hot gases is nearly three times as long as is the case in the two-cycle, per ignition, but since the latter part of the exposure in the four-cycle is not so intense, we may consider it as probably not more than equivalent to the earlier exposure. Roughly, therefore, we may say that while the two-cycle is exposed twice as often to the heat, the four-cycle is exposed twice as long, and the difference in heating is not as great as may be imagined.

Adherent to Rarer Type of Engine

Correspondent Comes Back at Sheehy on Comparison of Motors with Four-Cycle Principle

Practically, there is another element entering, which is the time required for the heat to be conducted from the inner surface of the cylinder wall, to the outer surface. It is certain that the heat to be carried away by the cooling means cannot be more than that which goes through the wall, and whereas the four-cycle, having no fresh gas immediately after the opening of the exhaust, allows the heat to pass through the wall. In the two-cycle this is not true, because at 130 to 140 degrees from the beginning of the heating, cool fresh gas is thrown against the walls and draws the heat from the inner surface before it has time to pass through to the outer surface. It not only lessens the need for cooling on the outside, but it is a source of economy on the inside for any heat which goes through the wall is lost, whereas all the heat that can be kept inside is a possible source of power.

I believe, in this connection, that any engine should be run as hot as it can be properly lubricated, and that it is more important to run the two-cycle hot than the four-cycle, in order to save and utilize this heat which would otherwise be carried through the walls and dissipated by the cooling means. We, therefore, employ a very high fire test oil which we consider essential with our engines.

Mr. Sheehy also is in fault when he says that because a two-cycle fires twice as often it should give twice the power. This is incorrect for two reasons; first, because the two-cycle practically never gets charges as large as the four-cycle, owing to the lower efficiency of its pumping means, and because the two-cycle does not compress the whole length of the stroke as does the four-cycle. With an exhaust port opening 60 degrees ahead of dead center, it is quite evident that compression cannot begin until the piston has traveled up about one-fourth of its stroke, so that really the compression stroke length of the two-cycle is about three-fourths the length of the four-cycle engine. On this account a smaller firing chamber should be used in order to get the same amount of compression, and it is evident that the same amount of working charge is not used in the two-cycle that is used in the four-cycle. In other words, with a given bore and stroke, the two-cycle is a simpler and a smaller engine, and if proper comparison is to be made, it should have slightly larger bore and stroke. It then will use substantially twice the fuel, and develop substantially twice the power. The usual comparison fails to take into consideration these facts, and is misleading and unfair.

This shorter compression stroke contains another thought which is that with proper deflector or arrangement for putting the new charge above the old one, the closing of the exhaust port expels practically all the remaining burned gases, so that the two-cycle works with a purer and more powerful mixture when it is taking full charges and this is one reason why it pulls so well under such conditions. The four-cycle, on the contrary, always contains a firing chamber content of burned gas. As shown before, however, few engines work under full throttle, and if but a small charge is introduced, there is little danger of any of it escaping with the exhaust. The result, therefore, is as great or greater economy than with a four-cycle.

What Mr. Sheehy says about the pressures always being against the connecting rod is quite true, and except when starting, a loose connecting rod bearing cannot be heard, for there is no throwing of the piston under an idle stroke as in the four-cycle, and this fact is worth as much to the car user as it is to the boat user, and will, sooner or later, be a good reason in favor of buying a two-cycle engine. Not only does the connecting rod require less care and stand more abuse, but the other parts which make the four-cycle so complicated simply do not exist on the two-cycle. Mr. Sheehy is quite right that if maximum power alone is considered, the four-cylinders, four-cycle will give more than the two-cylinder, two-cycle, but mose users are not much interested in the maximum performance of their engines, although they buy their cars on this rating. Let us hope that the time will come when users will insist on getting, and makers will supply, engines with power rating at an average or common working speed.—Charles E. Duryea.

COMPARATIVE POWER

St. Joseph, Mo.—Editor Motor Age—Which cylinder has more power of the same bore and stroke, a Buick or a Cadillac?

2—Which cylinder has more power, a valve-in-the-head, or a T-head?—Oscar F. Riemer.

1—The bore and stroke of the Cadillac motor is 4½ by 4½, and the nearest corresponding size in the Buick line measures 4¼ by 4½. The S. A. E. rating gives the Cadillac motor 32.4 horsepower, and it is claimed to deliver 39.5 at 1500 revolutions per minute, on the brake. The Buick motor acording to the S. A. E. rates at 28.9 horsepower, and is said to develop 39 B. horsepower at 1200 revolutions.

2—It is generally conceded that, owing to the shape of the combustion chamber, the valve-in-head motor will deliver more power for given piston speed and displacement, than the T-head type.

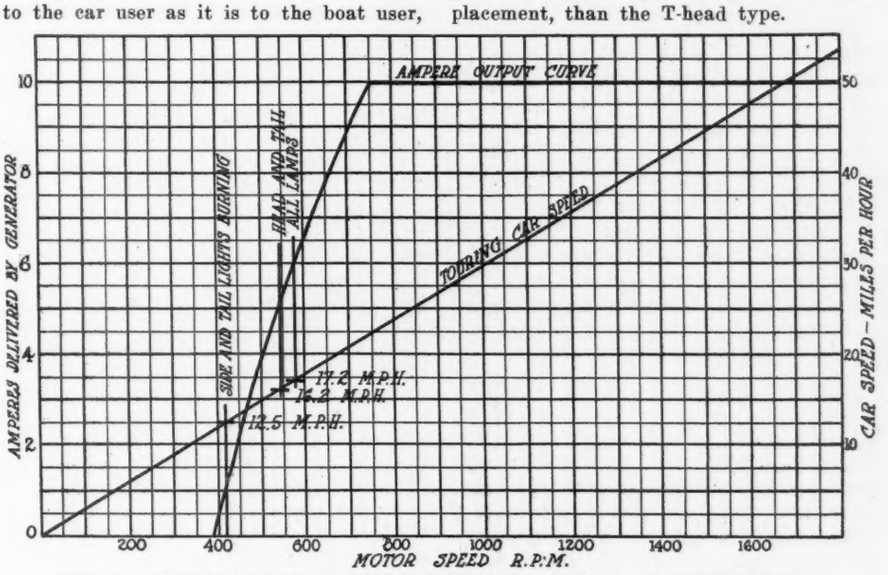


FIG. 7—OUTPUT CHART OF WARD-LEONARD SYSTEM ON HENDERSON

average speed than this, especially at night and in the open country, and by far the greater proportion of the actual running of the motor is done without the lamps being lighted.

At speeds, above 17½ miles per hour, even with all lamps alight, the output of the generator exceeds the consumption of the lamps, and the batteries are thus charged constantly during such speeds. This results, of course in very soon exceeding the normal charge; but it is claimed by the maker of the batteries used on Henderson cars, the Willard Storage Battery Co., that owing to the vibration of the car, the gas-bubbles, resultant from overcharge, are shaken off, with the result that no damage is sustained by the battery. In fact it is the maker's assertion that such overchage is actually beneficial to the battery.

The Motor Car Repair Shop

Magneto Repairing

THERE was a time when the manufacturers of magnetos and such instruments of a more or less complicated nature, believed that the less an operator of a motor car knew of these mechanisms, the less liable he would be to attempt its repair and adjustment, and that thus many errors and consequent damage to the machines would be avoided. It has been proven, however, that this theory is incorrect; and instead of immediately sending the instrument back to the manufacturer when it was suspected of being in need of adjustment or repair, no self-respecting repairman would return the mechanism to the maker until he had first dis-assembled and assembled it again in an effort to find the cause of the trouble.

The average repairman realizes that he is supposed to know how to make minor repairs and adjustments on a magneto, and the sooner he learns to do this the better off he is. It is gratifying to note that the more prominent manufacturers of magnetos have changed their policies in this respect, and that they are now issuing instruction books containing excellent descriptions and illustrations relative to the construction of their mechanisms, and that every effort is being made to promote the education of the owner and repairman in the care and adjustment of their magnetos.

Most magnetos nowadays are of marked similarity as far as these features are concerned that are apt to require attention occassionally. These features are the circuit-breaking mechanism, and the distributer. The circuit-breaker is the mechanism that comprises the little platinum contact points, which sometimes become carbonized or burnt and pitted, so that either they stick together occasionally or do not make good contact. This condition of the contact points causes misfiring, jerky operation of the motor and car.

The circuit-breaker of a magneto generally is located at the rear end of the armature shaft, and it is protected in the complete magneto by a brass or aluminum cap or cover. This mechanism should be kept clean; the contact points should be flat, and parallel with each other; and they should be adjusted so that they open about 1/64 inch, which is equal to the thickness of an ordinary business card. Ordinarily these contact points can be cleaned by inserting a piece of paper between them, closing the points down onto the paper, lightly, and then moving the paper about between them.

It has been stated in a number of publications that if the contact points become pitted, they should be dressed down by inserting a thin smooth file or emery cloth between them and then sliding them back and forth between them. This advice, though apparently good, has led many a motorist and repairman to do more harm than good to the points of a magneto. It is impossible to obtain a file thin enough to dress down the contact points as above described without destroying the parallelism of the contact surfaces.

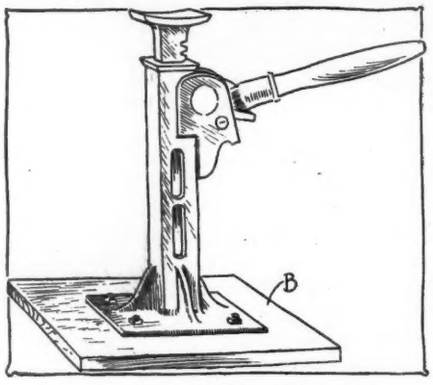


FIG. 1—IMPROVING THE JACK

Pitting of the contact points of a magneto, generally occurs on those mechanisms which are used in connection with dual ignition systems; systems in which a storage battery or a set of dry cells is employed to produce the hot spark required to start the motor. In such systems, the battery current usually is so strong it has a tendency to burn the contact points very rapidly, and especially when the operator neglects to switch from the battery onto the magneto immediately the motor is started. Many motorists very often forget to switch over onto the magneto, and run for hours at a time on the battery, which of course, uses up the energy of the battery and is detrimental to the contact points as well.

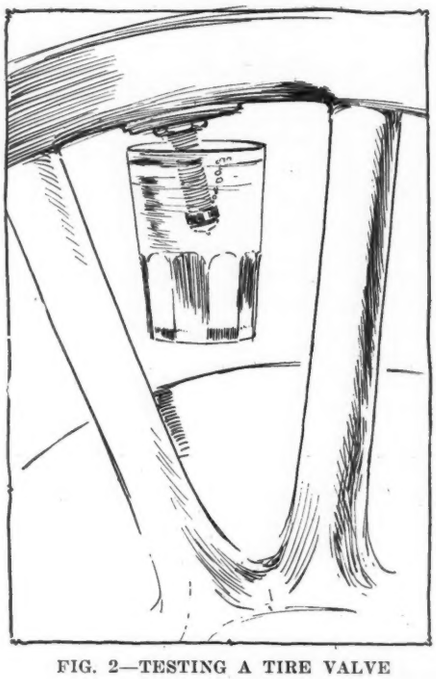


FIG. 2—TESTING A TIRE VALVE

A good way of dressing down the contact points of a magneto circuit-breaker, is to remove them from the mechanism, together with the lever and screw to which they are secured, and center them in a lathe. The points held in the lever may have to be smoothed down by hand, because it cannot be chucked in a lathe conveniently, but the point in the adjusting screw, may be held fast in a self-centering chuck in the revolving spindle of the lathe, and the lathe started. A very smooth flat file, with its two broad sides parallel, should then be held flat against the spindle of the tail-stock so that when it is moved toward the revolving spindle the face of the file will be parallel with the face of the contact point; then, by forcing the file lightly against the contact point it can be quickly and accurately milled down.

Improving the Jack

In Fig. 1 is shown how several of the jacks used at the repair pits during the last great race at the Indianapolis speedway, were rendered more substantial. They were simply secured to a block of hard wood B about 2 inches thick and as broad and long as would conveniently fit under the car. Many repairmen and even the manufacturers might profit a little by this example.

Testing a Tire Valve

In Fig. 2 is shown a very simple method of testing a tire valve for leakage. One has but to bring the wheel to rest so that the tire valve is at the top, then after having inflated the tire, and secured the valve cap in place, hold a glass of water as indicated so that the valve stem projects down into the water. If there is any leakage of air therefrom, it will be plainly indicated by the bubbles that will arise from the point of leakage.

Keeping Caps on Grease Cups

Lost caps from grease cups are a frequent source of annoyance and sometimes result in damage to the parts intended to be lubricated by the grease that has disappeared on account of the lost cap. Of course, usually the trouble goes no further than the necessity for a new cap. It is a great deal better, however, and not much more expensive—in fact, cheaper in the long run—to employ a set of really good cups with locked caps. A great cup cap may go on quite stiffly and seem secure, but it is amazing what vibration will do in the way of shaking off things that appear to be immune from such trouble.

The Mathematics of Motoring

DISSATISFACTION among motorists, particularly among those identified with the trade, with the standard method of rating the power of gasoline engines long has been a subject of frequent comment. With the advent of the long-stroke motor this dissatisfaction has become acute in some instances. The standard method of rating motors is by the S. A. E. formula, originally known as the A. L. A. M. formula. It is usually stated

$$HP = \frac{D^2N}{2.5}$$

at 1,000 feet per minute piston speed, where the D is the bore of the cylinder in inches and N is the number of cylinders in the motor.

It is obvious that all motors of the same number of cylinders and the same diameter of cylinder bore will be rated the same, no matter what their length of stroke or speed of revolution—two factors which materially affect the horsepower delivered. It is generally conceded that the formula gives nearly correct results for the average motor whose stroke is equal to the bore and at the assumed piston speed of 1,000 feet per minute.

The standard horsepower formula is mathematically correct so far as its derivation is concerned and by using it as applying to square motors at a piston speed of 1,000 feet per minute, a formula may be derived which will take the four factors of bore, stroke, number of cylinders and crankshaft speed directly into consideration and give results which within limits are as accurate for the different strokes and crankshaft speeds as the older formula gives for a square motor at the assumed piston speed. These limits depend on the normal speed of the motors.

This formula is

$$H.P. = \frac{D^2N\,S\,R}{15{,}000}$$

where D is the cylinder bore in inches, S is the stroke in inches, R is the number of revolutions per minute and N is the number of cylinders.

In developing this formula from the S. A. E. formula, it was assumed that the power developed by the motor varied directly as the piston speed. This is a fair assumption, as it is admitted generally that it is nearly true for the average motor. But it is only true within limits, for all motors have a certain critical piston speed and crankshaft speed at which further increase in speed results in a decrease instead of an increase in power. Below this speed, however, the formula will be found to give results which approximate quite closely to the power developed by the average motor.

The chart herewith will enable the power of a motor of any bore and stroke and speed to be seen quickly.

New Horsepower Rating

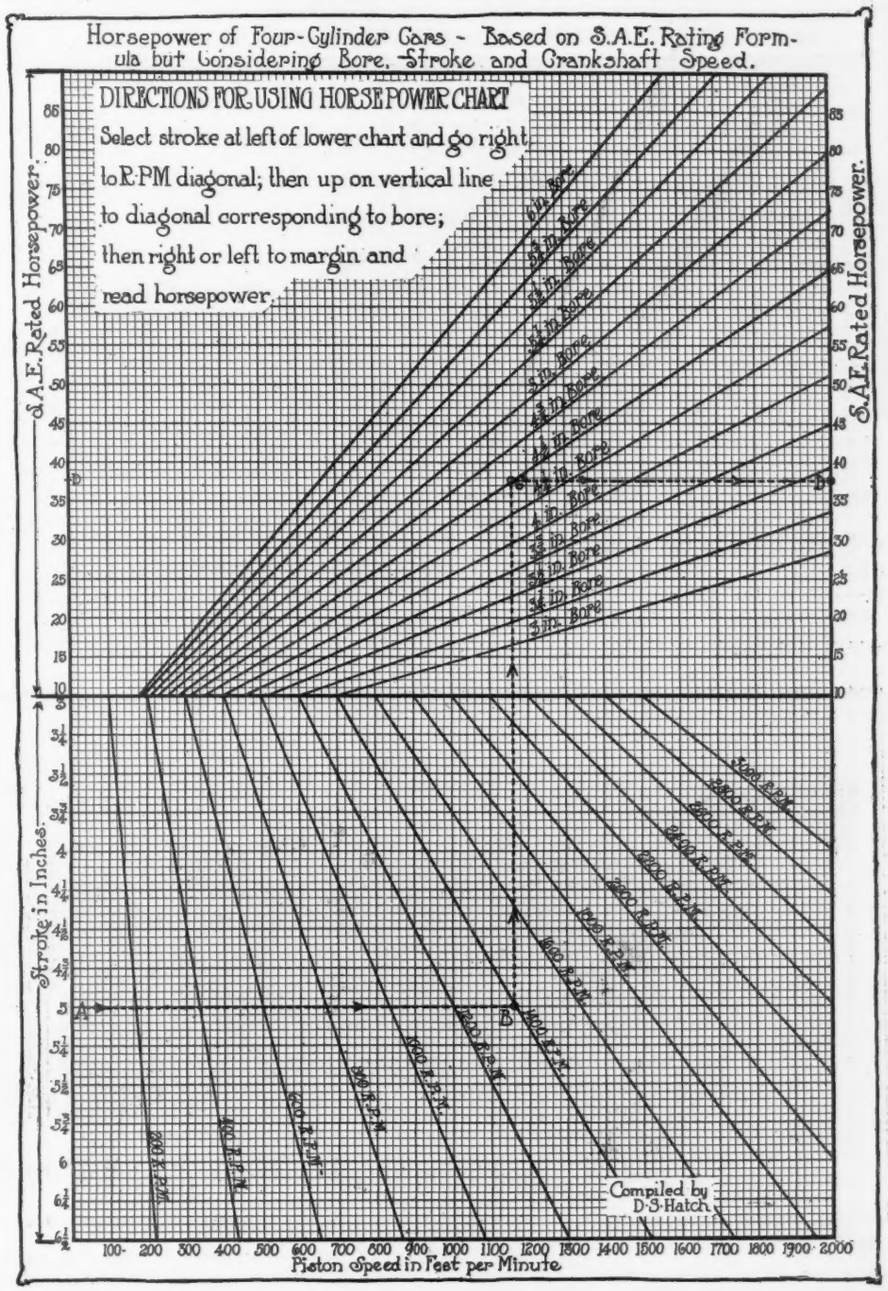
Modified S. A. E. Formula:

$$H.P. = \frac{D^2N\,S\,R}{15{,}000}$$

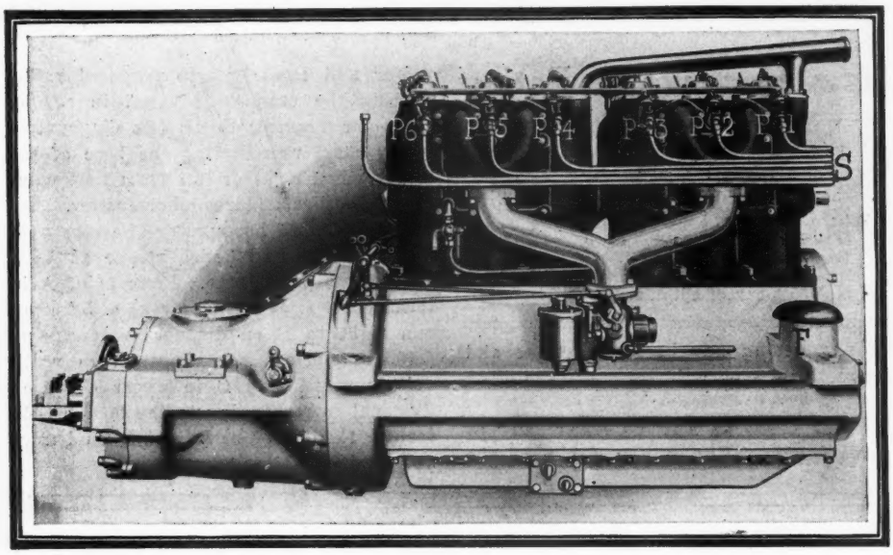
Where
D = Bore in inches
S = Stroke in inches
R = Crankshaft revolutions per minute.
N = Number of cylinders

To Use Power Chart

Enter chart at left of lower half at point corresponding to the stroke of the motor and run right to diagonal representing the crankshaft speed in revolutions per minutes; then up to diagonal in upper chart representing the bore of the motor; then right or left from that point to the border and read horsepower. Example: To find horsepower of motor with 4½-inch bore and 5-inch stroke at 1,400 revolutions per minute. From point A in lower chart representing stroke of 5 inches, run right to B on diagonal representing 1,400 revolutions per minute, then vertically upward into C in upper chart on diagonal corresponding to the bore of 4½ inches; then right or left to D on border and read 37.7 horsepower.


Horsepower of Four-Cylinder Cars - Based on S.A.E. Rating Formula but Considering Bore, Stroke and Crankshaft Speed.
DIRECTIONS FOR USING HORSEPOWER CHART
Select stroke at left of lower chart and go right to R.P.M. diagonal; then up on vertical line to diagonal corresponding to bore; then right or left to margin and read horsepower.
S.A.E. Rated Horsepower.
Stroke in Inches.
Piston Speed in Feet per Minute
Compiled by D.S. Hatch

Three Chalmers Models for 1913



INTAKE SIDE OF SIX-CLINDER CHALMERS MOTOR

P1, P2, P3, etc., Cylinder Valves for Starting System; S, Air Connections; F, Combination Filler and Breather Pipe. Note cylinders cost in blocks of three

NINETEEN-THIRTEEN will see three Chalmers models in the field, as in this previous season. These are the two four-cylinder types with horsepowers of 30 and 36, respectively, and one six-cylinder model, rated at 54 horsepower. For the coming year these will be called models 16, 17 and 18, but they are essentially the same three models that the company has on the market for 1912. Although no alterations in the design characteristics have been made, a number of refinements are to be noted. Taken on the whole, the Chalmers cars show no radical differences in their mechanical make-up.

General Design Same

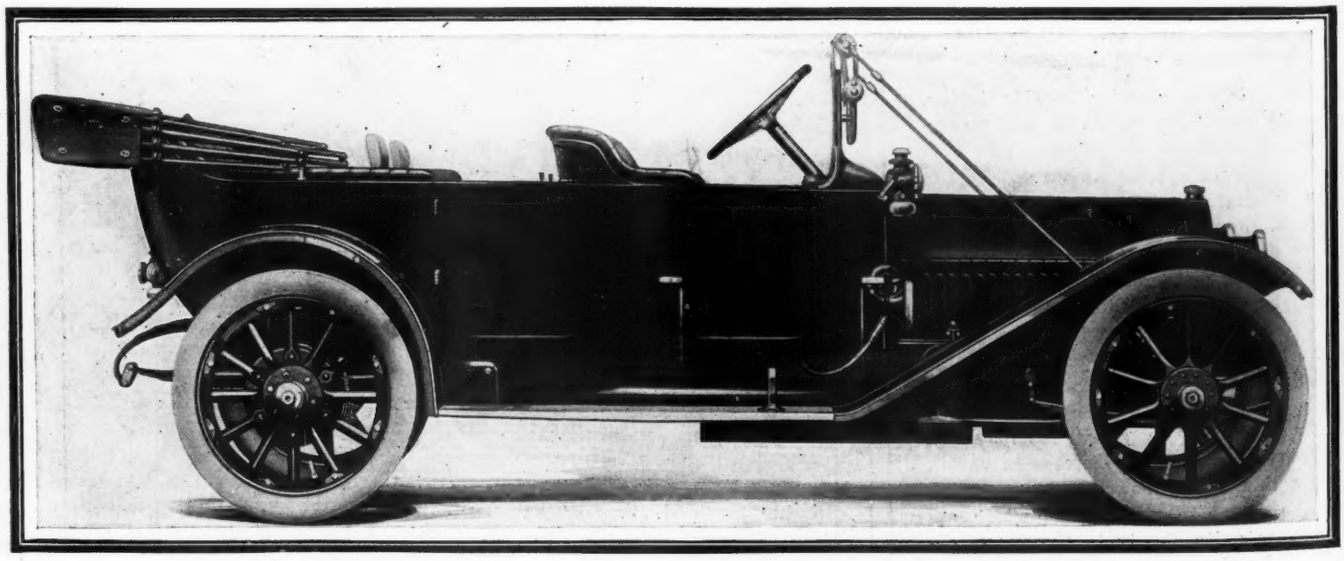
This adhering to design tendencies which it brought out in its cars of previous seasons is also apparent in the Chalmers company's motors for the coming year. They are all of the L-head type, the intake valves being in the cylinder heads and the exhaust valves at the sides. By this valve construction economy of motor length is obtained and at the same time the clear openings into the cylinders are not impaired. The motors are suspended at four points, two brackets being placed in front and two at the rear of the crankcases. Intake manifolds are on the right, exhausts on the left, while the pump and magneto shafts are mounted at the left also. Unit construction is obtained through the integral housing of the flywheels, clutches and transmission gears. These, in general, are features which will be found on all motors.

Taking up the more specific details of the motors, the larger four-cylinder type and the six are found to have the same bore of 4¼ inches and the same stroke of 5¼ inches. Model 16, the 30-horsepower, has cylinder dimensions of 4 by 4½ inches. The block casting of the cylinders is prevalent in both the four-cylinder types, while the six has its cylinders cast in groups of three, as shown in the illustration.

Manifold connections are at variance on the three motors, as a survey of the illustrations will bring out. There are two intake manifold connections for each of the four-cylinder models and four for the six-cylinder. This is rather an odd number for a six, and the design belongs to the Chalmers alone. In the six construction, after leaving the carbureter flange, the mixture is led into two branches and later passed to four before reaching the cylinders. Exhaust manifolds for the four cylinder engines are somewhat alike, one connection being used for each two cylinders. Each cylinder of the six, however, has an individual opening into the manifold.

Chalmers Valve Arrangement

Valves on all motors are of ample dimensions, they having a diameter of 2¼ inches and a lift of 5-16 inch. Exhausts are 2 inches in diameter with lifts the same as that of the intakes. Nickel steel is used in the making of the inlet valves and cast iron for the exhausts. The former open directly into the cylinder heads, and are held on their seats by conically-wound springs which are inclosed in light housings. Small rocker arms, set diagonally, actuate these inlet valves and they in turn are operated by the long rods which are in contact with the tappets. These tappets are the same



CHALMERS MODEL 18 SIX-CYLINDER, SEVEN-PASSENGER TOURING CAR FOR 1913

Refinements but No Radical Changes

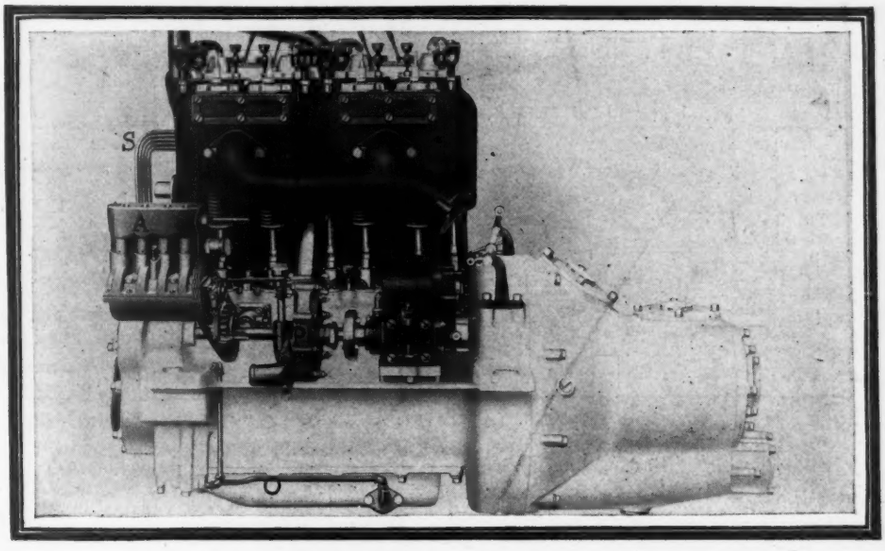
for both inlet and exhaust valves and bear directly on the cams. Wear on the rods is taken up by means of adjustments on their ends. The exhaust valve rods and their springs are of the common type.

Annular ball bearings carry the crankshafts of all motors, the six being provided with three bearings and each of the fours with two. These are all of large proportions. All other bearings in the motors are of the plain type. Standardization has made all the lower connecting-rod bearings of the same size in all the motors. The same is true of the bearings at the wrist-pin ends.

Motor Details

Camshafts and their cams are integral and they are mounted on plain bearings. These have a diameter of 1⅛ inch for the larger four-cylinder type and for the six, and ⅞ inch for the small four-cylinder engine. Camshaft gears, crank shaft gears and idlers are placed at the front ends of the motors, completely inclosed by easily removable cover plates. Gears are of the spur type.

Rayfield carbureters are to be found on all Chalmers motors for 1913. They are placed uniformly at the right side of the motors and in this position are most accessible. These carbureters are of the float-feed automatic design, hot-water jacketed. They are provided with auxiliary air intakes and dash pots. With this construction it is claimed that greatest economy of fuel and quickest motor acceleration are brought about. Dash adjustment is provided for regulating the gasoline supply valve. Fuel is supplied to the motors under pressure, this pressure being supplied to the gasoline tanks during motor operation by small plunger air pumps operated from the camshafts. Supply tanks are carried under the seats in touring cars, limousines and torpedoes and back of the seats in the roadsters.



EXHAUST SIDE OF CHALMERS FOUR-CYLINDER MOTOR

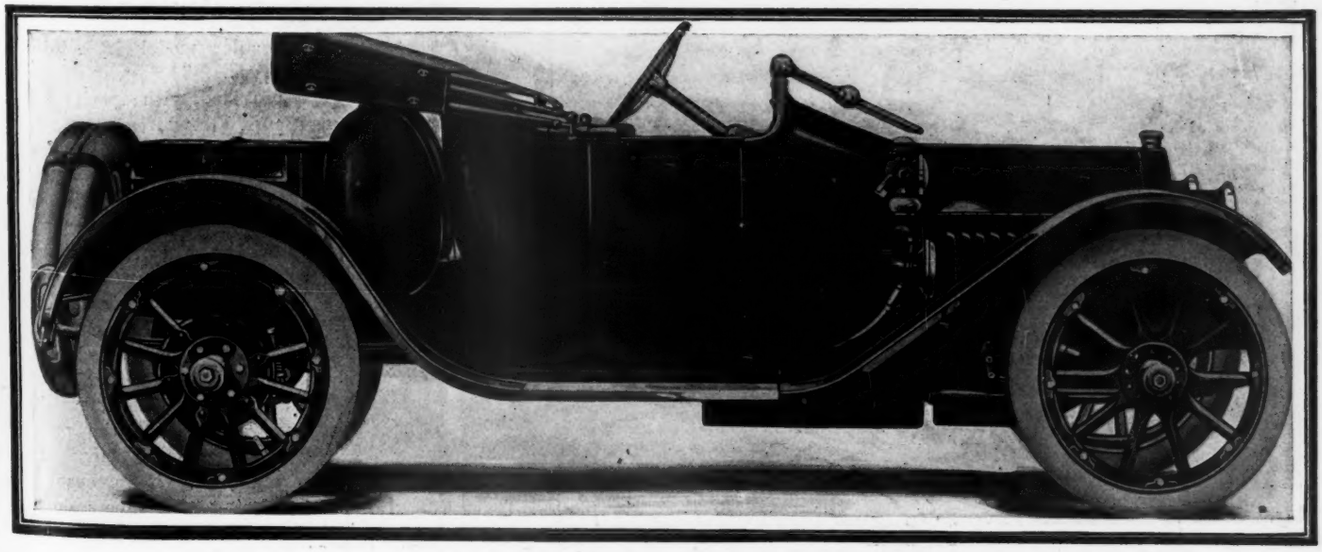
A, Four-Cylinder Air Pump for Starter and Tires; S, Starter Connections; P, Water Pump; M, Magneto; O, Oil Leads for Motor Lubrication

The constant level splash system of lubrication is made use of on all motors. Individual oil troughs in the crankcase sub-base contain the oil into which the rod ends dip and, then throw the lubricant to all parts. Overflowing from these troughs, the oil finds its way into the bottom of the crankcase and eventually to the pump. Here it is pumped through a strainer up through the sight feed arrangement on the dash and back to the troughs. Special reserve tanks for lubricating oil are carried on both 30 models and on the roadsters and coupes of the two higher powered machines. The oil is supplied to the motor through the combined breather and funnel which is located on the right front supporting arm of the crankcase and is shown at T in one of the illustrations.

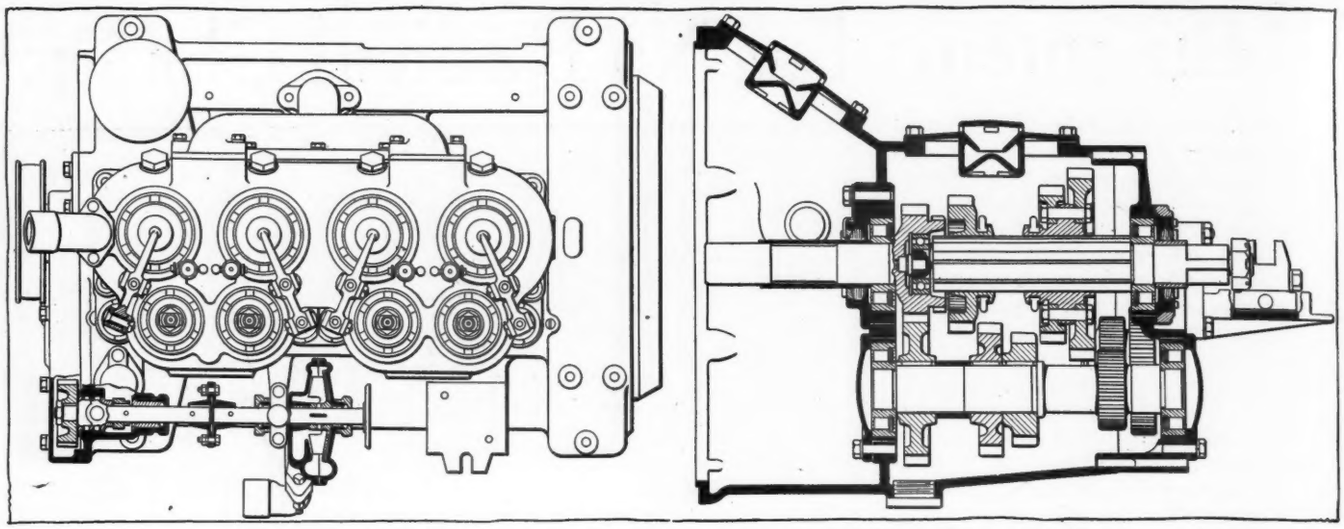
Dual ignition with one set of spark plugs is used on all models. A storage battery is pressed into service for starting, the magneto being switched on after the car is running in the usual way. Magnetos are mounted in the easily-reached position at the end of the magneto-pump shafts and may be removed very easily through the use of the couplings between the magnetos and the water pumps.

Chalmers Water Circulation

Exactly the same design of water pump is used on both the six and the larger four-cylinder motors and a slightly different style on the smaller four-cylinder motor. They are all of the centrifugal type, however, and provide for pos-



FOUR-CYLINDER ROADSTER, 1913 CHALMERS MODEL 17



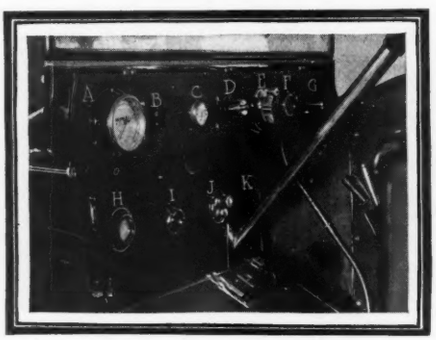
TOP VIEW OF MOTOR AND CONSTRUCTION OF CHALMERS FOUR-SPEED GEARSET

itive water circulation. Pumps have the same relative location on the six and on the larger four but they are placed a little farther forward on the model 16 Chalmers motors for next year.

Chalmers Self-Starter

The starting system used on all models is of the compressed-air type which employs an air compressor or pump, storage tank and distributor. There is an individual air pipe to each of the cylinders, these pipes leading from the distributor. A single pipe or tube passes from the supply tank to this distributor and a single pipe also leads from the pump to the storage tank. In the Chalmers construction this tank is placed under the body and parallel to the side frame members.

Up to this year the Chalmers starting system has made use of a check valve in the head of one of the cylinders to take a portion of the compressed gas of each compression stroke of this cylinder and pass it to the storage tank, but on the new models this check valve arrangement has been done away with and has been replaced by a Kellogg four-cylinder air pump. This is mounted on the left side of the motor at the front and it is driven from the magneto shaft by a silent chain. In other respects the system has not been altered. In operation the driver simply pulls the dash lever after throwing on the storage battery current. The operation of this lever admitting the compressed air from the tank to the distributor. This, in turn, sends the air to the cylinder which has its piston ready for the working stroke, driving it down and rotating the crankshaft. Air is then admitted to the next cylinder in order and so on until the motor takes up its regular cycle of operations. The starter handle then is returned to its original position, shutting off the flow of air to the motor.



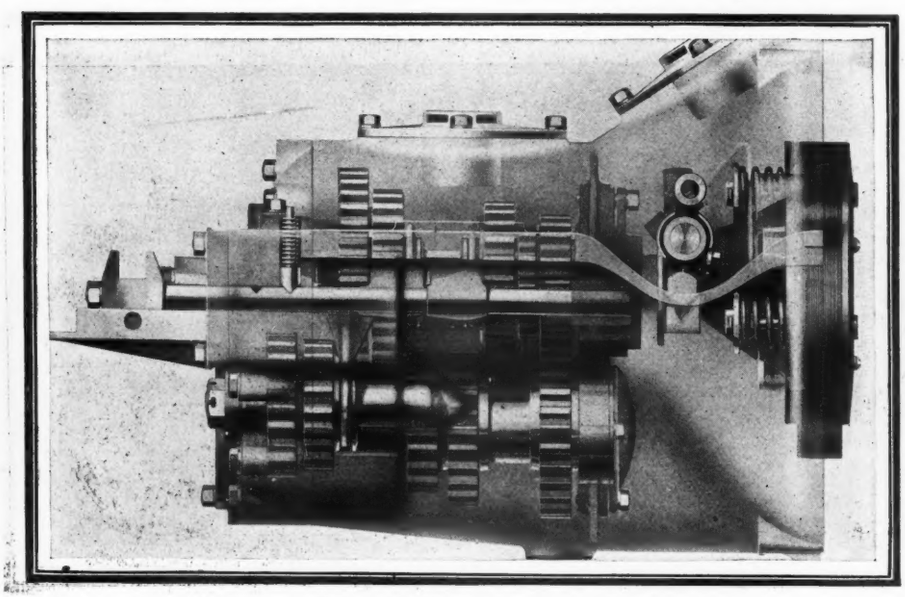
VIEW OF CHALMERS DASH

A, Speedometer; B, Lightning Swith; C, Air-Pressure Gauge; D, Starting Valve; E, Ignition Switch; F, Gasoline Gauge; G, Horn; H, Oil Sight Feed; K, Ventilator

Gearset Construction

As already mentioned, the gearbox, clutch and flywheel are, by virtue of their housing, made a part of the unit power plant construction. Removable cover plates permit of easy access to the change-speed gears and to the clutch parts. The lubricant for these parts is also put through these holes. The clutch is of multiple-disk construction, the plates being made of hardened and ground saw-tooth steel and running in a bath of oil. The four-speed gearset, which was adopted for the two larger cars last season, has been continued in them, while the smaller model 16 retains its three-speed type. The gearset control levers are provided with special locking devices. Gears are shifted through the use of an H-gate and hand-lever as in the commonly adopted form. The gear shafts of the gearset are mounted on roller bearings.

Passing from the power plant, the power is transmitted to the rear axle through a drive shaft of ample size. This is fitted with two universal joints, one being placed just back of the clutch and gearset housing and the other just forward of the differential housing. A torque arm runs parallel to the propellor shaft and this arm is of large section at its rear end where it fastens to the differential housing and tapers down to a swivel connection at its forward end. A cross member of the frame carries the



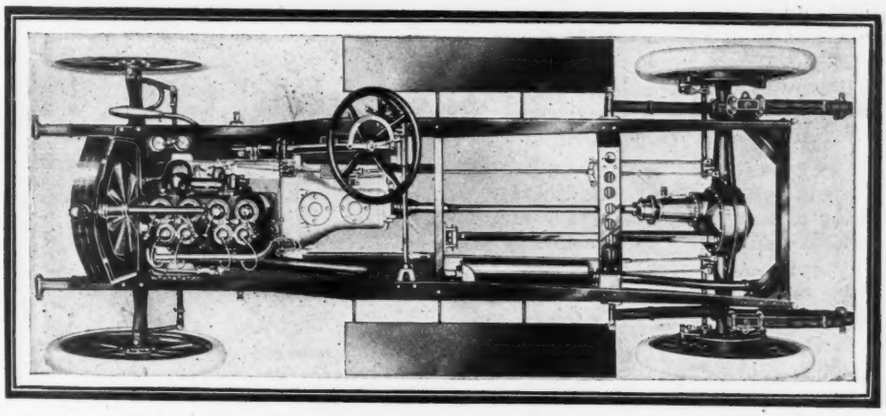
PHANTOM VIEW OF CHALMERS 1913 FOUR-SPEED GEARSET

swivel. This construction applies to all models.

All three chassis types have the same design for their rear axles, a view of which is found in one of the accompanying illustrations. They are of the floating type and the housings are of pressed steel, heat treated. The joining of the two halves of the housing at the flanges makes a web which acts as a strengthening feature. The rear axle driving shafts are mounted on Timken roller bearings and they also are carefully hardened by heat treatment. Access to the differential is made possible through the removal of the cover plate, as the illustration brings out. Front axles are of I-beam section and they have very little drop at their centers. They are of large proportions, made of single-piece, drop-forged steel. Wheel spindles are fitted with Timken roller bearings. The formerly used driving-crab on the live axle shaft has been supplanted by flange drive, bolted to the rear wheels by six easily removed nuts and bolts. This construction has been adopted as more positive than the other type, since the flange arrangement allows no lost motion.

Change in Brake Location

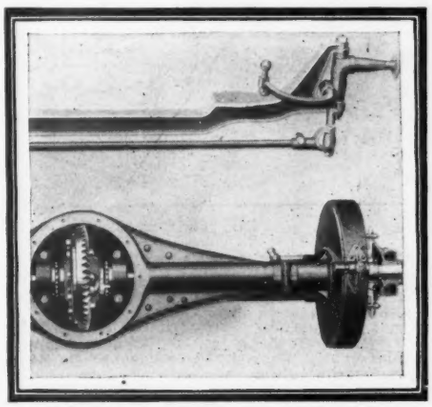
On all models for 1913 both sets of brakes are placed on the rear wheels. As far as the smaller four-cylinder car is concerned, this is a departure from former designs since up to this year the car was provided with a service brake on the transmission. Now, however, the service brake has been placed in the rear brake drums as in usual American practice. Both four-cylinder models, therefore, have external contracting service brakes and internal expanding emergency brakes. The drums are 14-inches in diameter with face widths of 2-inches. The six-cylinder brakes operate in a similar manner and have a diameter of 16-inches



CHASSIS OF THE FOUR-CYLINDER CHALMERS FOR 1913

and a width of 2½ inches. Heat-proof asbestos lining composition is used on all brakes.

Pressed-steel, channel-section frames, having a thickness of metal of 5-32 inch



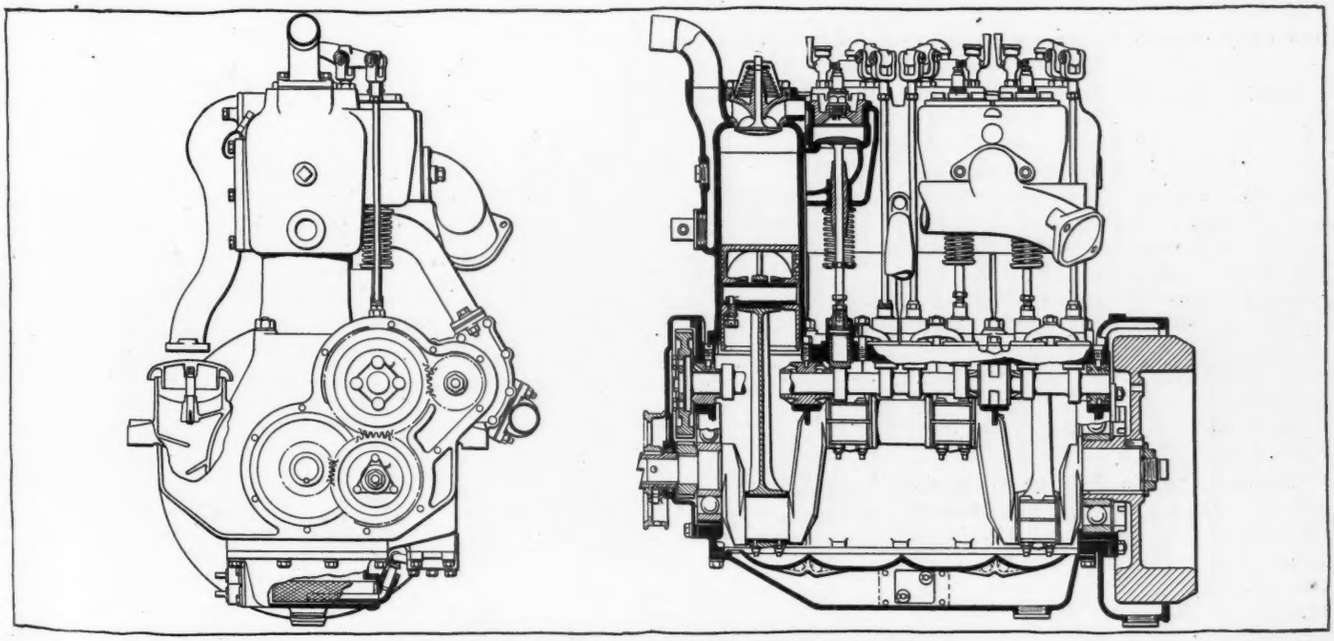
CHALMERS FRONT AND REAR AXLE

are used. These are inswept at their front ends to permit of smaller turning radius. A little more than half-way back, the frame has a slight drop and still farther back a kickup in order to clear the rear axle. Three cross members act as effective braces. One is placed a little to the rear of the gearbox, the second halfway between this and the rear end of the frame, and the third at the rear. All models have semi-elliptic front springs and three-quarter elliptic rear springs. These are all of large proportions and present a most substantial appearance.

Interchangeable Steering Gear

Steering gears have been changed somewhat. One steering column, adjustable for all types of bodies, is now used, another evidence of standardization. The columns are larger and fully enclosed for dirt protection. Steering wheels on the four-cylinder cars are 18 inches in diameter and 20 inches on the six.

The highest-powered car carries wheels 36 inches in diameter, as does the larger four. The 30 has 34-inch wheels. Wheels are all of heavy spokes of the artillery type, of hickory. The hub flanges are of steel. As already mentioned, the rear wheels are driven by the flanges and the spokes are bolted to the brake drums. All rims are demountable and quick-detachable. Thirty-four by 4-inch tires are



SIDE AND END VIEWS OF CHALMERS 1913 MOTOR

used on the smallest car, while 36 by 4-inch are used all around on the larger four, except when it is fitted with seven-passenger touring car and limousine bodies, when it takes 4½-inch tires instead. All tires on the sixes are 36 by 4½ inches.

Many improvements and changes have been made in the body designs, 14 types being offered. The lines have been made more sweeping in appearance, and easy riding has been the object. Doors are wide for easy access, and upholstery is specially heavy. A 2-inch pitch is given to all seats. Leather is blue-black, dull-finished, pebble-grained and stuffed with hair. A depth of 11 inches is given to the cushions.

Chalmers Dash Equipment

The dash arrangement has been made especially attractive and is uniform for all models. The dash is leather-covered over the metal, no wood being used. A view of the dash arrangements is afforded in one of the accompanying illustrations. Speedometer, air-pressure gauge, self-starter handle, lighting switch and magneto switch are placed where they are most easily reached. The control levers have been placed within the body at the driver's right and no changes have been made in the driving arrangements.

Lighting is accomplished through the use of the Gray & Davis system. An automatic cut-out in connection with the light switch regulates the flow of current from the generator or storage battery, depending upon whether or not the motor is running. The Chalmers lighting equipment also includes combination oil and electric side and tail-lamps, which is a valuable feature in an emergency.

On the larger cars the regular equipment includes, in addition to the features already mentioned, speedometer, tire irons, power tire-inflator, floor covers, robe and foot rails, horn, pump, jack, a full set of tools and a tire repair outfit. The small car has as regular equipment special Chalmers-type gas headlights.

Perhaps one of the most interesting features of the Chalmers announcement to motor car owners is the fact that the six will be marketed at a price of $950 lower than this year. This change in the cost of the company's highest-powered model is explained by the fact that during the past season the factory has been materially enlarged so that greater production is possible. The standardization of the entire Chalmers line, making many parts of the six-cylinder car interchangeable with those of the 36, has also had much to do with the fixing of the lower figure.

Wheelbases remain the same on the six-cylinder car and on the smaller four, these being 130 inches and 115 inches respectively. Formerly the model 17, four-cylinder type, had the same wheelbase as the 30, but for 1913 it has been lengthened to 118 inches.

Current Motor Patents

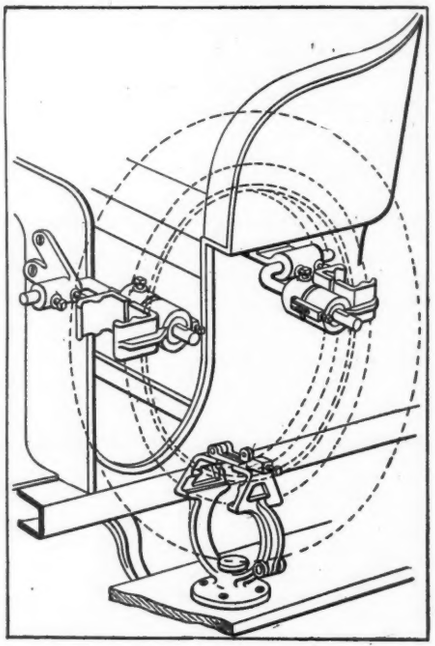


FIG. 1—FISK TIRE HOLDER

PATENTS ISSUED JULY 16, 1912.

1,032,404—Electrical Accumulator. Frederick Wyer Hardy and Emil Henry Hungerbuhler, Saltburn, England. Filed September 20, 1911. Serial No. 609,566.

1,032,435—Vehicle Wheel. John Sinnott, Philadelphia, Pa. Filed November 5, 1910. Serial No. 590,789.

1,032,453—Vehicle Jack. Frederic William Unger, Leesport, Pa., assignor, by mesne assignments, to Ellen D. Unger, Leesport, Pa. Filed October 18, 1910. Serial No. 587,686.

1,032,454—Shock Absorber. Richard T. Wainwright, Rye, N. Y. Filed August 21, 1911. Serial No. 645,196.

1,032,487—Force Feed Lubricator. Adolph W. Manzel, Buffalo, N. Y., assignor to Manzel Brothers Co., Buffalo, N. Y. Filed April 29, 1908. Serial No. 429,910.

1,032,502—Lubricator. Alexis R. Pribil, Detroit, Mich., assignor to Penberthy Injector Co., Detroit, Mich., a corporation of Michigan. Filed May 15, 1911. Serial No. 627,207.

1,032,516—Engine Starter. William L. Stuller, Detroit, Mich., assignor of one-quarter to George W. Soules, one-sixth to Thomas R. Bell and one-sixth to William H. Soules, Detroit, Mich. Filed February 28, 1912.

1,032,517—Axle Drive. Viggo V. Torbenson, Bloomfield, N. J., assignor, by mesne assignments, to Torbenson Gear & Axle Co., Bloomfield, N. J., a corporation of New Jersey. Filed November 28, 1911. Serial No. 662,900.

1,032,521—Float Valve. Friedrich Georg Wangelin, Dresden, Germany. Filed November 27, 1909. Serial No. 530,114.

1,032,536—Apparatus for Purifying the Exhaust of Internal Combustion Engines. Paul Gerli and Guido Blenio, New York, N. Y. Filed July 28, 1911. Serial No. 641,114.

1,032,544—Vehicle Tire. Le Roy R. Hess, Joliet, Ill., and Adelbert S. Burdick, Lockport, Ill., assignors to Samuel J. Drew, Joliet, Ill. Filed October 5, 1910. Serial No. ———.

1,032,547—Carbureter. Albert Howarth, Providence, R. I., assignor, by mesne assignments, to Star Carbureter & Supply Co., Providence, R. I., a corporation of Rhode Island. Filed July 24, 1909. Serial No. 509,380.

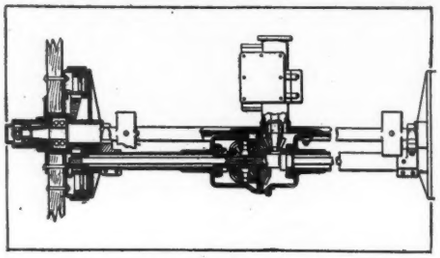


FIG. 2—TORBENSON REAR AXLE

1,032,570—Lubricator. Marion Taylor, Soudan, Va. Filed October 12, 1911. Serial No. 654,426.

1,032,579—Vehicle Tire. Howard M. Ambler, Philadelphia, Pa. Filed February 27, 1911. Serial No. 610,981.

1,032,582—Means for Regulating the Temperature of Air Fed to Carbureters. Davis Barnard, Los Angeles, Cal. Filed November 8, 1910. Serial No. 591,307.

1,032,584—Engine Starter. Ernst A. Bostrom, Atlanta, Ga. Filed January 17, 1911. Serial No. 603,134.

1,032,607—Supporting Device for Motor Cars. Edwin M. Ingalls, Newburyport, Mass. Filed November 21, 1910. Serial No. 593,298.

1,032,620—Adjustable Wrist Pin Bearing. Ezra F. Morton, Long Pine, Neb. Filed December 29, 1911. Serial No. 668,548.

1,032,633—Motor Car. Charles B. Stebbins, Three Rivers, Mich., assignor to Sheffield Car Co., Three Rivers, Mich. Filed December 2, 1911. Serial No. 663,503.

1,032,659—Tire Holder. John Clarence Cole, Chicopee Falls, Mass., assignor to the Fisk Rubber Co., Chicopee Falls, Mass., a corporation of Delaware. Filed May 25, 1910. Serial No. 563,248.

1,032,662—Sight Feed Condensation Displacement Lubricator. Frank W. Edwards, Logansport, Ind., assignor to the Chicago Lubricator Co., Chicago, Ill., a corporation of Illinois. Filed August 24, 1908. Serial No. 450,096.

1,032,681—Vehicle Spring. Lyman D. Jones, Bridgeport, Conn., assignor to Etta E. Brandeau, Bridgeport, Conn. Filed February 1, 1912. Serial No. 674,767.

1,032,690—Motor Car Buffer. Allan L. McGregor, Chicago, Ill. Filed November 13, 1911. Serial No. 659,931.

1,032,694—Engine-Starting Device. Charles A. Milne, William Taylor and Myron R. Churchill, Detroit, Mich., assignors, by mesne assignments, to Motor Appliances Co., Detroit, Mich., a corporation of Michigan. Filed May 13, 1909. Serial No. 495,643.

1,032,696—Friction Clutch. Peter J. Mueller, Maquoketa, Iowa. Filed August 31, 1911. Serial No. 647,019.

1,032,724—Lubricating Device. Conrad R. Adams, Buffalo, N. Y., assignor to the Pierce-Arrow Motor Car Co., Buffalo, N. Y. Filed April 22, 1912. Serial No. 692,375.

1,032,730—Elastic Wheel. Henry G. Baldwin, San Francisco, Cal. Filed July 11, 1911. Serial No. 637,904.

1,032,757—Dual Tire Wheel for Motor Trucks. Phineas Jones, Metuchen, N. J. Filed January 6, 1912. Serial No. 669,753.

1,032,759—Clutch Mechanism. Louis A. Maurer, Newark, N. J. Filed December 15, 1911. Serial No. 665,987.

1,032,794—Exhaust Silencer for Internal Combustion Engines. Franz Emil Wolf, Nowawes, near Potsdam, Germany. Filed May 13, 1910. Serial No. 561,053.

1,032,863—Wind-Shield for Motor Cars. Willis A. Pearson, Troy, Ohio. Filed April 16, 1910. Serial No. 555,937.

1,032,863—Vehicle Wheel. Vincent Sanphy, South Bend, Wash. Filed January 31, 1912. Serial No. 674,430.

1,032,877—Vehicle Wheel. James W. Calta, Platte, S. D. Filed December 29, 1911. Serial No. 668,415.

1,032,903—Motor Car Driving Gear. John Hettrich, Lincoln, Neb. Filed September 28, 1910. Serial No. 584,316.

1,032,934—Controlling Mechanism for Motor Vehicles. Bennett J. Patrick, Brookfield, Mo. Filed November 16, 1911. Serial No. 660,673.

1,032,937—Carbureter-Heater. Burt Neulon Pierce, Indianapolis, Ind. Filed January 27, 1910. Serial No. 540,323.

1,032,942—Spring Wheel. Bert E. Riley, La Harpe, Ill. Filed May 13, 1911. Serial No. 626,928.

1,032,953—Retainer for Ball Bearings. Richard A. Schultz, Chicago, Ill. Filed August 18, 1911. Serial No. 644,823.

1,032,955—Puncture Proof Inner Casing for Pneumatic Tires. Thomas F. Shields and Willis Ray Bolter, Lowell, Mich. Filed November 9, 1911. Serial No. 659,352.

1,032,957—Vehicle Wheel. Robert Thomas Smith, Jr., Longford Bridge, Warrington, England, assignor of one-half to Lynton Wheel and Tire Syndicate, Limited, Longford Bridge, Warrington, England. Filed January 29, 1910. Serial No. 540,827.

1,032,977—Cushion Tire. David A. York, North Grove, Ind., assignor of one-half to William H. York, Ashley, Ind. Filed October 5, 1911. Serial No. 652,907.

1,032,978—Governor for Explosive Engines.

Latest Ideas of Inventors

Frederick C. Zumdahl, Rockford, Ill., assignor to Rockford Engine Works, Rockford, Ill., a corporation of Illinois. Filed September 24, 1910. Serial No. 583,645.

1,032,979—Gasoline Engine. Frederick C. Zumdahl, Rockford, Ill., assignor to Rockford Engine Works, Rockford, Ill., a corporation of Illinois. Filed January 3, 1911. Serial No. 600,585.

1,032,983—Rotary Gas Engine. Emile Berliner, Washington, D. C., assignor to Gyro Motor Co., Washington, D. C., a corporation of the District of Columbia. Filed September 21, 1911. Serial No. 650,627.

1,032,990—Spring protector and Shock Absorber. Robert P. Clark and William H. Clark, Fresno, Cal. Filed December 23, 1911. Serial No. 667,456.

1,032,991—Tire. Clinton T. Coates, St. Louis, Mo. Filed March 18, 1911. Serial No. 615,360.

1,032,997—Removable Motor Car Top. Raymond W. Eastman, Alva, Okla. Filed August 15, 1911. Serial No. 644,148.

1,033,004—Engine Starter for Motor Cars. William S. Grigsby, Denver, Colo. Filed June 19, 1911. Serial No. 634,148.

1,033,038—Apparatus for Oiling Roads. George M. Saybolt, Jersey City, N. J., assignor to Standard Oil Co., New York, N. Y., a corporation of New Jersey. Filed October 12, 1909. Serial No. 522,265.

1,033,048—Fluid Clutch. John C. Carpenter, Houston Heights, Tex. Filed November 14, 1910. Serial No. 592,164.

1,033,056—Locking Shutter for Taximeters. Paul Richert, Pittsburgh, Pa. Filed December 5, 1910. Serial No. 595,764.

1,033,070—Headlight. John Eugene Koeberle, Los Angeels, Cal. Filed July 23, 1908. Serial No. 445,430. Renewed March 19, 1912. Serial No. 684,810.

13,444—Automatic Clutch. Oliver C. Talbot, Kansas City, Mo. Filed May 31, 1912. Serial No. 700,889. Original No. 965,606, dated July 26, 1910. Serial No. 524,297.

PENBERTHY Lubricator—No. 1,032,502—Alexis R. Pribil, Detroit, Mich., assignor to the Penberthy Injector Co., Detroit, Mich. Filed May 15, 1911, dated July 16, 1912. A sight-feed lubricator, designed expressly for internal combustion motors. It consists of the usual cylindrical oil reservoir, with glass sides, having within its center an axial standpipe in which a needle valve is situated, seating in the bottom outlet of the stand-pipe, which communicates with the bottom of the reservoir, and being controlled by an eccentric lever mounted on the top of the device, under the tension of a coil spring. An air duct leads to the top of the reservoir from the expansion chamber to which the needle valve communicates. This expansion chamber leading to a small double-seated ball check valve, which opens into the final outlet. This portion of the device is threaded to the body, so that it can be removed.

Pierce-Arrow Worm Gear Lubricator—No. 1,032,724—Conrad R. Adams, Buffalo, N. Y., assignor to the Pierce-Arrow Motor Car Co., Buffalo, N. Y. Filed April 22, 1912, dated July 16, 1912. For the purpose of lubricating the thrust and radial bearings at the end of the worm element of a worm-gear axle assembly, this device consists of an oil propeller near the end of the worm-shaft adjacent to these bearings, in the form of helical blades, so pitched as to move the oil raised by the worm-gear, toward the bearings.

Axle Drive—No. 1,032,517—Viggo V. Torbenson, Bloomfield, N. J., assignor by mesne assignments to Torbensen Gear and Axle Co., Bloomfield, N. J., filed Nov. 28, 1911, dated July 16, 1912. Consisting of an externally geared drive axle, this device is mounted on a motor vehicle in the usual manner. The main axle is of the I-beam type, adapted to receive the housing of the driving member. This latter portion of the device consists of a divided driving shaft, connected at its middle by a differential gear, and driving the wheels by means of pinions secured to the ends of the shaft, which are mounted in bearings below the edge of the mixing chamber, above its members, engaging with gears within the brake drums. The differential is driven by bevel gears and a transverse shaft in the usual manner.

Howarth Carbureter—No. 1,032,547—Albert Howarth, Providence, R. I., assignor by mesne assignments to Star Carbureter and Supply Co., Providence, R. I. Filed July 24, 1909, dated July 16, 1912. The feature of this design consists of a piston valve, raised by the suction of the engine, which on rising opens auxiliary air inlets or tuyeres and unseats a needle it. A plunger, actuated by an angle lever is used to raise it for starting. The needle valve seat is adjustable from below.

Tire Holder—No. 1,032,659—John Clarence Cole, Chicopee Falls, Mass., assignor to the Fisk Rubber Co., Chicopee Falls, Mass. Filed, May 25, 1910, dated July 16, 1912. The improvement embodied in this device consists of its means of retaining the tire, consisting of three metal clamps, two to be secured to the body, and one to the running board. These clamps grip the tire on its inner bead instead of on the outside. The bottom clamp has a hinged jaw adapted to lock in engagement with the body of the clamp, and to simultaneously tighten its grip on the tire.

German Exhaust Silencer—1,032,794—Franz Emil Wolf, Nowawes, Germany. Filed May 13, 1910. Dated July 16, 1912. Of unusually compact and simple nature, this invention, of efficient, should prove a real improvement over the ordinary cylindrical muffler. It consists of a number of thin metal plates, clamped transversely to the exhaust pipe, with holes through the centers of all but the last, which blocks the fine interstices between the disks, exhausting it at their edges. The last plate could be fitted with a valve at its center to act as a cut-out.

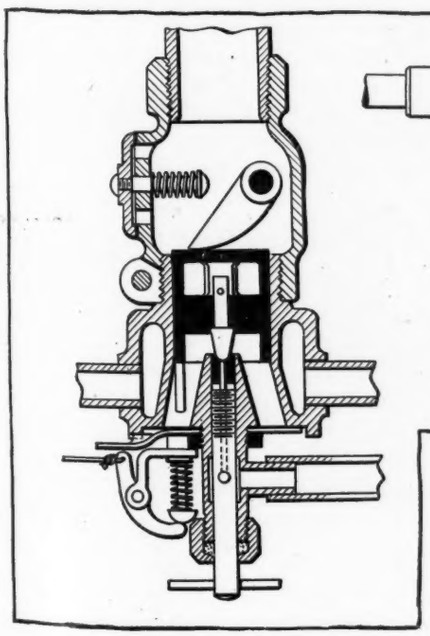


FIG. 3—HOWARTH CARBURETER

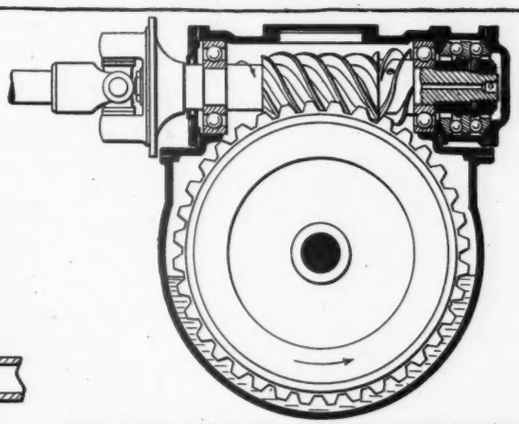


FIG. 4—PIERCE-ARROW WORM-DRIVE LUBRICATION

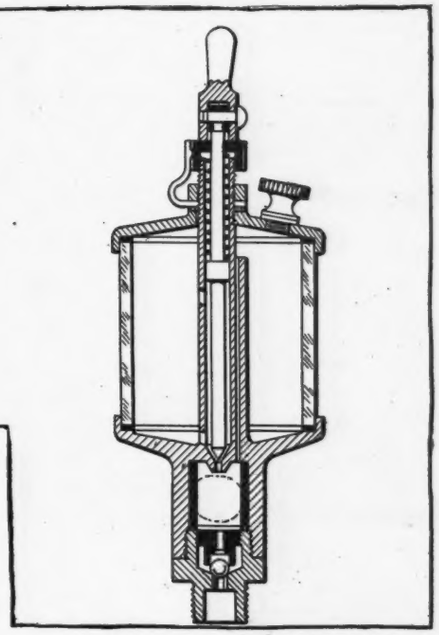
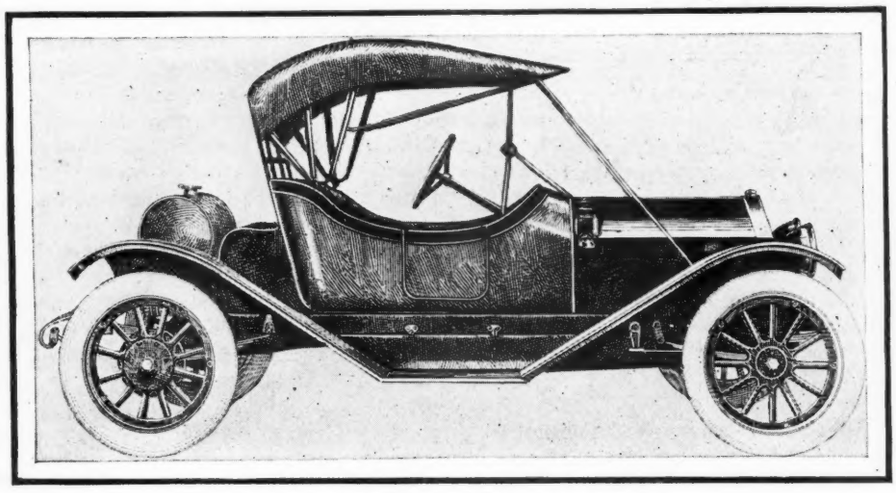


FIG. 5—PENBERTHY LUBRICATOR

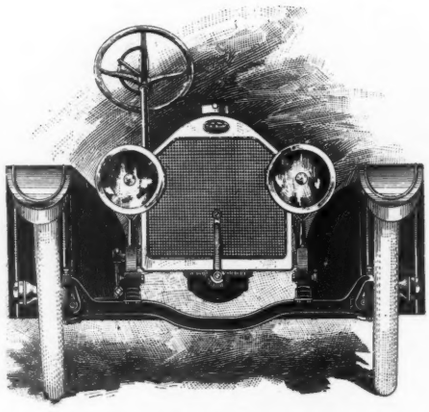
Great Western Changes to L-Type



GREAT WESTERN 40 ROADSTER FOR 1913

GREAT Western cars will appear for the season of 1913 in four body types upon a single chassis model. This chassis is known as the 40, as it has been for the past two years. The general features of the 40 chassis, with two exceptions, are the same as have distinguished this car in the past. One exception is the increase in stroke of the motor from 5 inches to 5½ inches. The bore remains 4¼ inches. The other and more radical change is one of design. Instead of placing the inlet valves in the top of the cylinder heads and the inlet valves in the side as in earlier models, both valves in the 1913 motor are on the side in an L-type construction. This eliminates the long rods and rocker arms operating the inlet valves and permits inclosing the valves and their operating mechanism. This eliminates noise and protects the valve mechanism from dirt.

In connection with the change in the valve location is a new feature in the use of roller valve lifters, the rollers following the contour of the cams so that there is no slapping noise as the lifters come down on the cam surface. The valve stems are of steel, hardened and ground to size, and the valves are gray iron electrically welded to the stems.

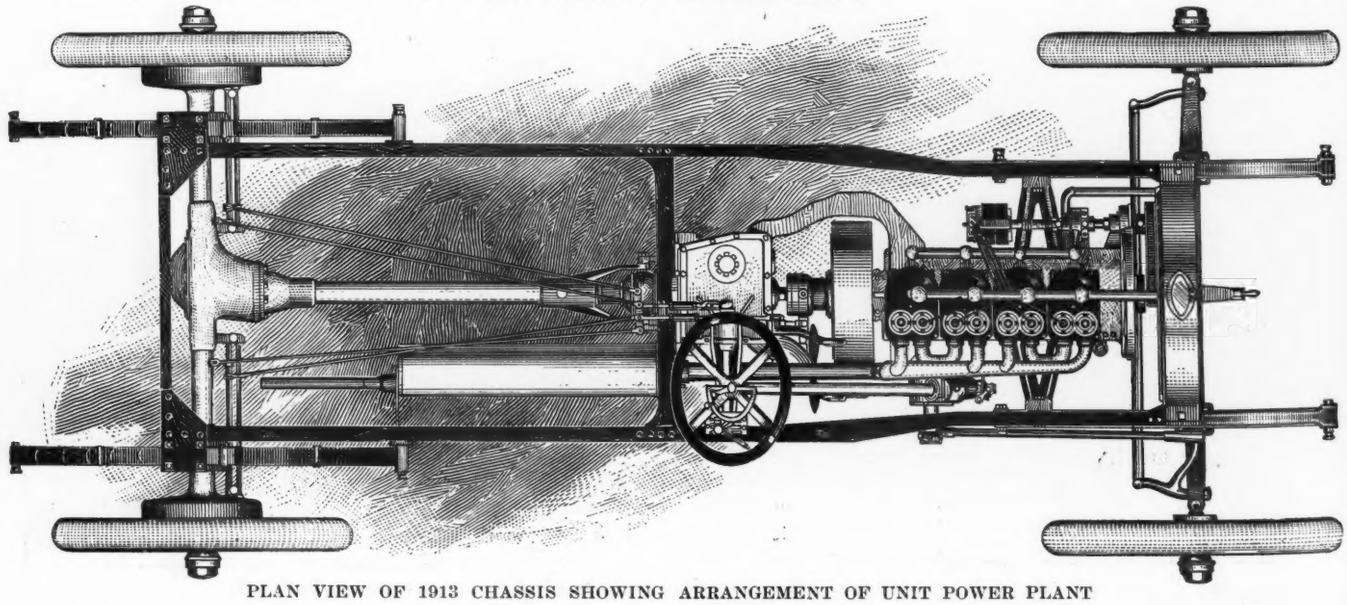


FRONT VIEW OF GREAT WESTERN 40

Design of the Great Western 40 includes a unit power plant of which the four-cylinder motor has its cylinders cast separately. The pistons are fitted with convex heads and four eccentric expansion rings are fitted to them. The crankshaft again is made of the five-bearing construction with 15$\frac{11}{16}$ inches of ground main-bearing surface. It is offset from the center of the cylinders and fitted with babbitt die-cast bearings. The camshaft is made from a solid drop-forged steel bar and operates in phosphorous-bronze bearings.

The crankcase again is cast from aluminum in an I-beam section and steel studs run from the base of the cylinder down through the crankshaft caps and take the strain away from the crankcase. The bottom half of the crankcase contains the oil reservoir and is independent of the crankshaft bearings, so that it can be removed easily without disturbing the rest of the motor. Hand-hole plates have been placed in the bottom half of the crankcase above the oil level, so that connecting rod adjustments can be made without removal of the bottom half of the crankcase. The timing gears have spiral teeth and run in a separate compartment of the crankcase, which is automatically lubricated from the crankcase oil supply.

Lubrication of the motor is accomplished by a 2-gallon oil reservoir contained in the lower half of the crankcase. A plunger oil pump operated from one of the cams of the camshaft keeps the oil level in the crankcase at the proper height from the reservoir in the lower compartment; it also supplies oil to the timing gear housing mentioned above. The lubrication of the cylinders themselves is by splash from the connecting rods, the ends of which dip in large oil pockets in the bottom of the case. The pistons are

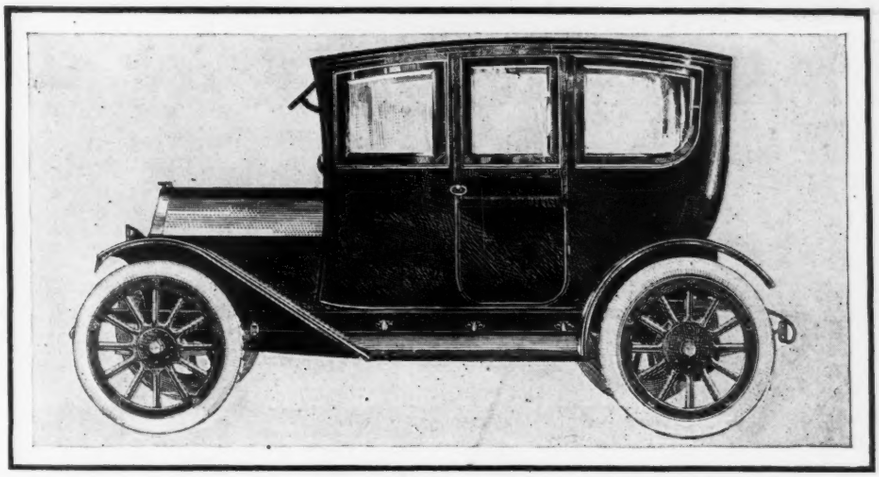


PLAN VIEW OF 1913 CHASSIS SHOWING ARRANGEMENT OF UNIT POWER PLANT

Valve Inclosure on the Peru Product

provided with six oil grooves to distribute the oil to the cylinder walls. A new feature in the lubrication system consists of an oil groove round the piston with holes for returning the oil to the crankcase and thus eliminate smoking when too much oil is being supplied.

Cooling of the Great Western motor is by means of a pump circulation and a vertical-tube radiator with a honeycomb front fitted on the frame by brackets that have no contact with the water space. Aluminum water pipes without joints are used in the water circulation system. A Schebler carbureter with an auxiliary automatic vacuum valve is used, and ignition is by the dual system using the new Remy magneto with concealed coil and dash kick switch and lock.

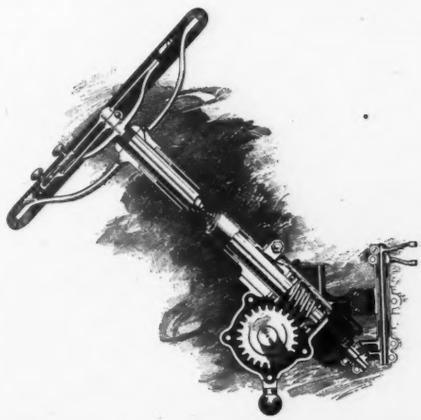


GREAT WESTERN 40 SEDAN

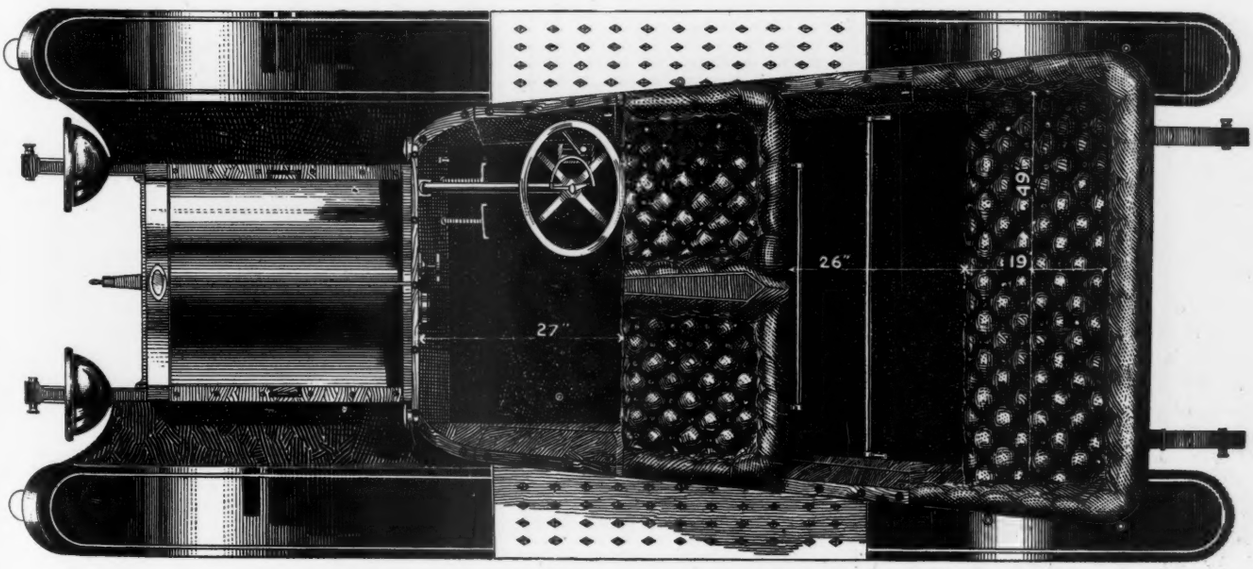
Considering the rest of the unit power plant, we find an aluminum cone clutch operating in the flywheel. A slight change has been made in the clutch for the coming season by variation in the angle of the cone so that it will work more gently. The cone is faced with copper-woven Raybestos over six flat springs imbedded in the periphery of the cone.

The gearset is of the selective type, giving three speeds forward, and is completely housed in an oil-tight aluminum case. Glands and packing nuts are provided to prevent oil leaking from the case. The mainshaft and counter shaft are side by side, so that all gears travel in an equal amount of oil and easy inspection is provided. Double-row New Departure ball bearings are used throughout the gearset.

From the gearset, drive is transmitted through a propeller shaft provided with ball universal joints. The torsion moment is taken up by means of a torsion tube which encloses the propeller shaft and at its rear end bolts by a flange to the differential housing and at its front end through a yoke to the gearcase. The front axle is a large I-beam drop forging of special nickel steel with the tie rod behind the axle. The axle has a clearance of 12 inches. The rear axle is of the floating type with a large inspection plate at the rear of the differential housing and is fitted with double row New Departure ball bearings and Hyatt roller bearings for the differential. Steering gear is of the full worm-and-gear type, as shown in one of the illustrations. The gearset control is by an H-plate quadrant at the driver's right and inside the body. The frame is a channel section inswept at the dash and reinforced at the rear by a large gusset plate. The front springs are 40 inches in length, semi-elliptic, and the rear are three-quarter elliptic and 47 inches long. These springs are chrome vanadium steel with nibs on each side to prevent the spring leaves from spreading or shifting. Double internal brakes on 12-inch drums are used and the brake rods are equipped with equalizers. The wheelbase shows an increase of 4 inches over this year's design and is now 118 inches.



WORM AND GEAR STEERING MECHANISM



PLAN VIEW OF TOURING CAR SHOWING ROOMY BODY DESIGN

The Realm of The Commercial Car

Health and Quiet Another Argument

By William B. Stout

Motor Truck More Sanitary than Horse and Makes Less Noise

WITH the adoption of motor vehicles the number of horses in London has dropped from 500,000 to 70,000. Will the motor truck eventually supplant the horse in America?

The greatest growth of man or people always is along lines of efficiency. Useless effort must be eliminated, all energy concentrated and directed along the lines of least resistance to accomplish the greatest result with the least expenditure of time and energy. With the coming of a higher plane of efficiency per man as a basis, old methods will have to be eliminated to give place to the new, and more advanced modes of living adopted. Every hindrance to mental efficiency and activity will be done away with in the eventual order of things and with the advent of the gospel of efficiency as a basis of life will come an increased opportunity.

The world never has moved backward. No invention with possibilities in it for doing work cheaper, quicker and with less effort ever has been dropped until something better has come to take its place, and every new invention of worth has increased the worth of a life by its own value. There can be no doubt but that of late inventions, or rather developments, there has come no one more important than the improvement and adoption of the motor truck as a delivery unit. The motor vehicle is here. For city work at least the horse is doomed.

The Sanitation Angle

The matter of sanitation alone was sufficient to condemn him as soon as the motor truck appeared, but the public, used to filthy streets and dusty winds, has thought of the health aspect last. Streets of the future need have no animal filth mingled with what dust collects, and an epidemic of colds and grippe, costly in wasting effort and lives every season, need not follow every dust storm or windy day. The odor of gasoline is at least clean, and spilled oil will lay dust, not poison it. The motor truck is the greatest existant benefactor to the swat-the-fly movement and with its coming also will be seen to disappear a large measure of contagious diseases now traceable to the domestic pest, the house-fly. Flies do not breed in garages. Common humanity, sanitation and common sense demands the elimination of the horse and urban life.

A great hindrance to office efficiency in congested districts is noise. Much was said of the noise of the motor car in its early stages of development and legislation was passed demanding quietness, yet the common two-horse coal wagon going home empty at 3 miles an hour over the cobble pavement made more racket than motor cars. The public was used to wagon noises—the motor car noise was new and it demanded its suppression.

Not long since the writer, while waiting for a car, overheard the remarks of some bystanders as to the noisiness of a 5-ton motor truck which passed at full speed, with loose chains and worn sprockets. The noise of the motor truck was drowned before it was half a block away by the noise of an approaching street car four blocks away on a sanded track, but the talk still continued about the truck. The speakers were used to the noise of a car line and did not notice it. Trucks are being made quiet. Eventually the street car line must be made quiet or it will be forbidden the streets.

Abroad, and in London particularly, there already is a standard of quietness to which all motor vehicles must conform. As the motor vehicle has come to be the unit of transportation on London streets so has quietness increased, and the city's roar diminished.

Noise Made by Horses

There are zones of quietness enforced about hospitals in these days within which street cries are prohibited, mufflers must be left closed and all unnecessary disturbances eliminated. If noise is a strain on the mind of a person weakened by sickness then it must be a strain to a healthy person, not noticed on account of self-control, but nevertheless present. By eliminating noise mental efficiency is increased. As business comes to demand quietness and freedom from abstraction, it will demand the elimination of the iron-tired vehicle and clacking iron-shod animals, and the substitution of a quiet motor truck. Both bodily and mental forces demand the elimination of the horse from the standpoints of sanitation and mental efficiency. Motor vehicles can and will meet the new order of things.

One great problem of our fast growing cities is how to take care of traffic in congested areas. Chicago for instance is adding to its population at the rate of more than 60,000 people a year. These must be served by firms which grow to meet the demand and these in turn handle their business through the loop or central business area where traffic is now enormous. Eighty thousand tons of freight are hauled through this area of less than a square mile every day. The rate of movement is between 2 and 3 miles an hour. Stops at crossings are frequent to allow other traffic to pass. These stops

IT'S SERVICE THAT COUNTS

WHILE prospective motor truck buyers are laying emphasis on costs of operation in connection with their delivery work, many are buying pleasure cars for their agents without expectation of cutting down carfare through so doing but of acquiring increased business.

With a firm operating locally over a considerable territory, or covering rural districts, there is a great deal of time lost by the drummer or salesman in waiting for trains or, in the case of city work, in riding over roundabout car routes to visit customers in inaccessible places. These men must be visited, and the motor car in this case becomes a motor delivery vehicle whose load is the ability of the salesman. The dealer buys a car for this man because with it the cost per delivery of his sales arguments is cut down, for the salesman often can see twice as many customers in a day as though he were using the train or street car.

This being the case, the car takes the place of an extra salesman and hence is a saving, for to run a car is cheaper than to hire a good salesman, while good cars are many and salesmen of class few. It is not that the firm has saved carfare or railway expenses through the adoption of motors, but that it has increased efficiency with the same equipment of men, and cover a greater territory. There are possibilities for business growth not before present.

The same is true with the buying of a motor truck. It is not that there will be a saving at first in cost of delivery per package—though there may well be—but that a new field is opened for increased business and a new field of operation with almost the same equipment of employes, and little addition to office duties. It is service that counts.

are lengthened by the slowness of the vehicles in crossing. If the speed through this area could be increased to 6 miles an hour this congestion would be cut in half. Motor trucks can do this and more with safety, having the added advantage of 35 feet less length of space for the same daily load capacity since each takes the place of two teams.

Cost of Congestion

It is somewhat hard to figure out the monetary cost of obstruction of vehicles but taking maximum and average speeds a general basis may be arrived at, assuming fairly level roads, showing a loss with motors nine times as great as with horses. It costs say $6 a day in round numbers to operate a two-horse wagon with driver, this outfit drawing the load at say 4 miles an hour. The cost is thus about 60 cents an hour for a 10-hour day; the daily possibility is 14 miles with the same team.

If the team can make 4 miles an hour when at work but through traffic conditions can only make 2 miles per hour, then half the cost for the hour is wasted, or 30 cents. Only half of the result was gotten for that hour that was possible so that 30 cents' worth of work was lost through the obstruction. The horse-vehicle, however, from the tiring of the animals can make but 14 miles a day, hence if operating 3½ hours a day in actual hauling it has reached its daily efficient limit. If hindered by traffic for the whole 3½ hours of actual hauling the loss is but $1.05 per day.

Motor Truck's Possibilities

With a motor truck 40 miles a day is a very fair average possibility with a truck capable of 10 miles an hour. When hindered in congested districts the truck is held down to horse speeds or, to take the speed of the former case, 2 miles an hour. Put the cost per day of the motor truck at $12 inclusive, or $1.20 per hour. If hindered to a 2-mile speed the loss is four-fifths or 96 cents per hour. The truck can operate 10 hours a day—some operate 22—making a loss per day if this were continued of $9.60. If a truck were hindered to this extent it would quickly be withdrawn from service and horses substituted until conditions improve, or would be switched onto a less congested route.

The London, England, traffic branch of the board of trade has compiled comparative co-efficients of obstruction for different types of London vehicles after a long series of observations. In this work the motor carriage or taxi was taken as a unit. The list follows:

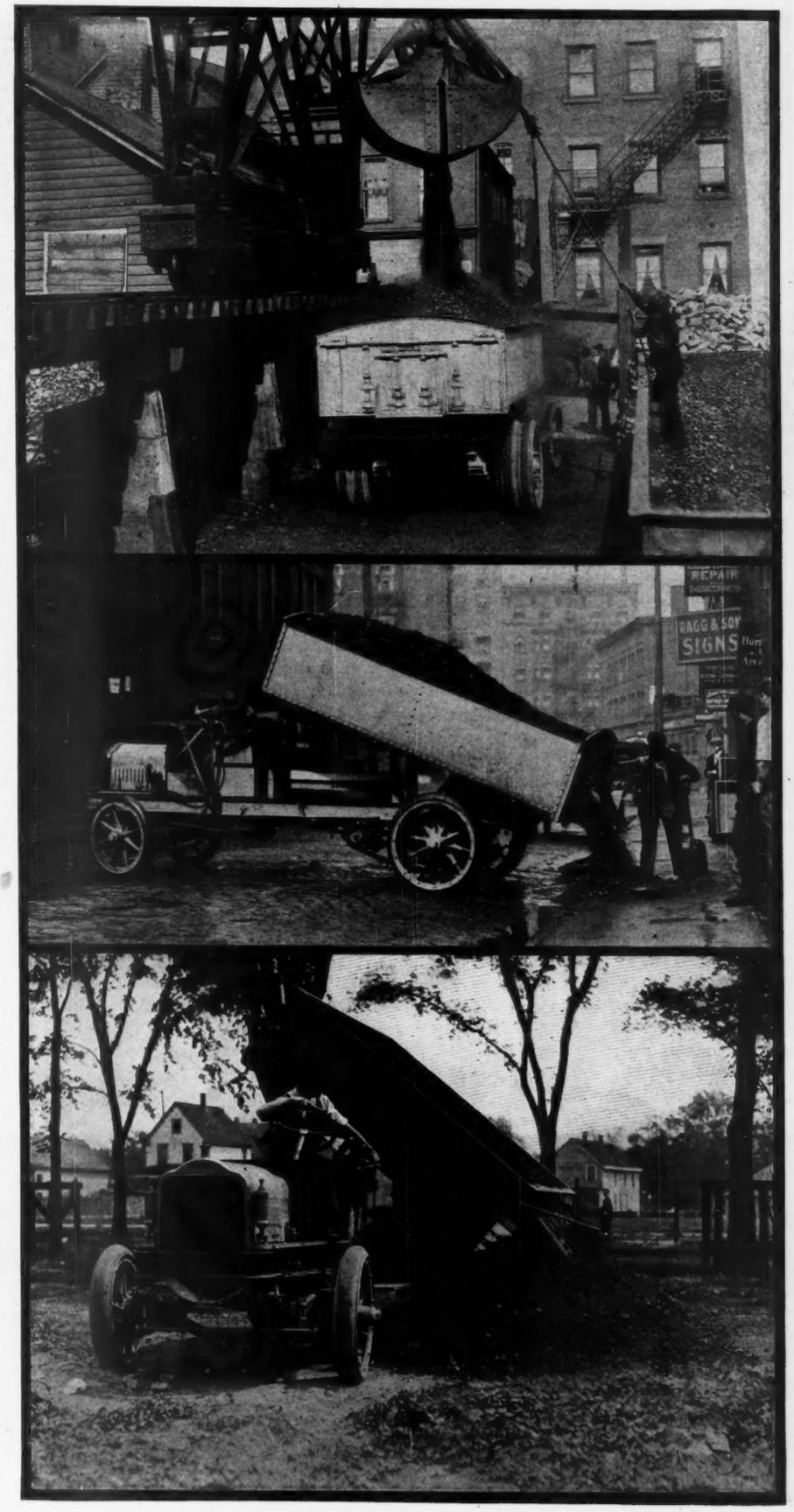
TRADE VEHICLES

One horse, fast	3
One horse, slow	7
Two horse, fast	4
Two horse, slow	10
Motor, fast	2
Motor, slow	5

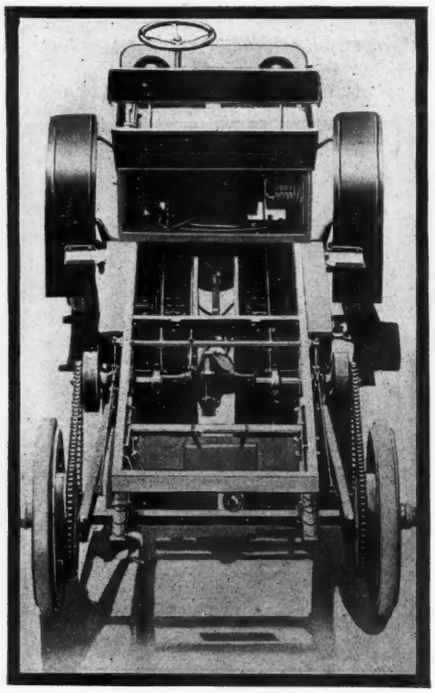
PASSENGER VEHICLES

Electric trams	10
Omnibuses, horse	5
Omnibuses, motor	3
Cabs, horse	2
Cabs, motor	1
Carriages, horse	2
Carriages, motor	1

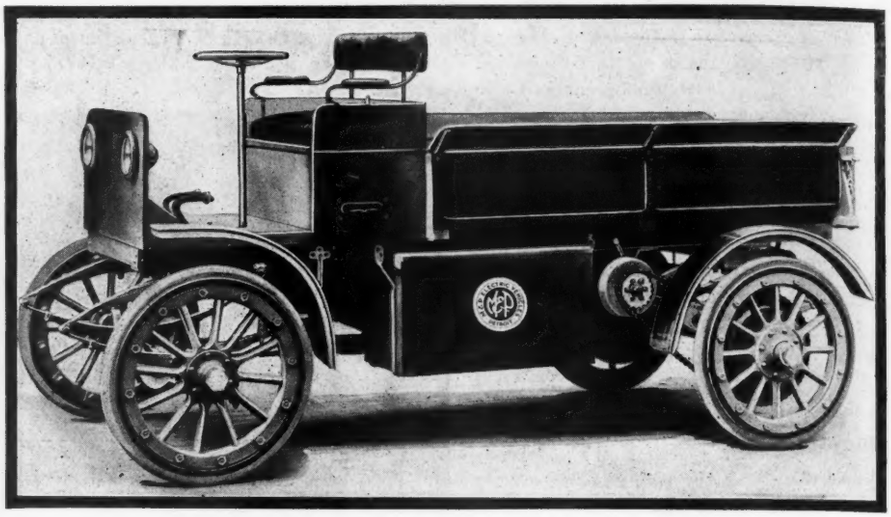
It will be noted from this that a fast horse delivery vehicle is three times as obstructive to traffic as a taxicab, a one-horse cab being twice the taxicab figure. A slow two-horse delivery wagon which is the average offers ten times the ob-



WHITE HEAVY SERVICE DUMP TRUCK IN COAL TRADE SERVICE



CHASSIS OF NEW 1-TON M. AND P. ELECTRIC TRUCK



EXPRESS BODY FITTED TO 1-TON M. AND P. ELECTRIC TRUCK CHASSIS

One-Ton Truck Added by M and P

FOR next season, the M. and P. Electric Vehicle Co. of Detroit is planning to market a 1-ton truck in addition to the ½-ton model which it has had before the public for several months. The new machine shows very few departures from the design which was used in the lighter proposition, the motor being the same as that of the other model. However, wherever it was found necessary to alter or increase the size of any part to make the new design heavy enough for the greater capacity which it is to have, this has been done.

The motor is placed forward under the driver's seat, the armature shaft being in line with the propeller shaft. This motor is a Westinghouse, type V-50; its rating being 80 volts and 30 amperes at its normal speed of 1,500 revolutions per minute. The controller is also a Westinghouse, type 501-F, and it is constructed for continuous torque. There are four speeds forward and two reverse. This controller is placed under the seat at the right, its handle being placed in convenient position for the driver to operate.

The battery is a Gould make having forty cells, each cell consisting of 13 T. H. plates and being connected to the others by means of L-type of connectors. The speed of the new truck is 9 miles per hour with this battery equipment and when the machine is under full load. Under normal conditions of service the battery is capable of giving 50 miles on a charge.

The battery is carried in two compartments mounted under the frame in the usual location between the motor and the jackshaft. The use of two battery boxes is necessary, due to the location of the motor forward, making it necessary for the propeller shaft to pass back to the jackshaft between them. This construction is the same as that used with the smaller M. and P. truck.

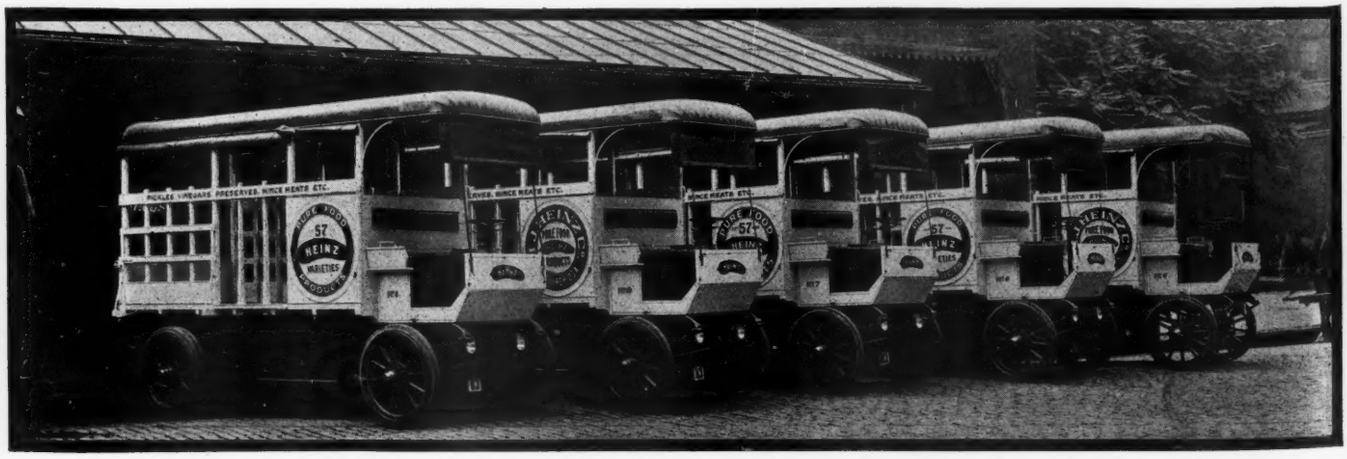
As to the drive, the first reduction is to the jackshaft, the propeller shaft which conveys the power to the latter from the motor being of 1¼ inch square section. Two universal joints are mounted on this shaft, one just back of the armature shaft of the motor and the other at the differential housing. From the jackshaft the power is transmitted to the rear wheels in

struction of a taxi and twice that of a slow motor. A slow truck in England refers more generally to the tractor types with a 4-mile speed so that for American purposes our trucks would all class as fast. A two-horse rig here offers five times the obstruction of a motor truck of say 3½ tons.

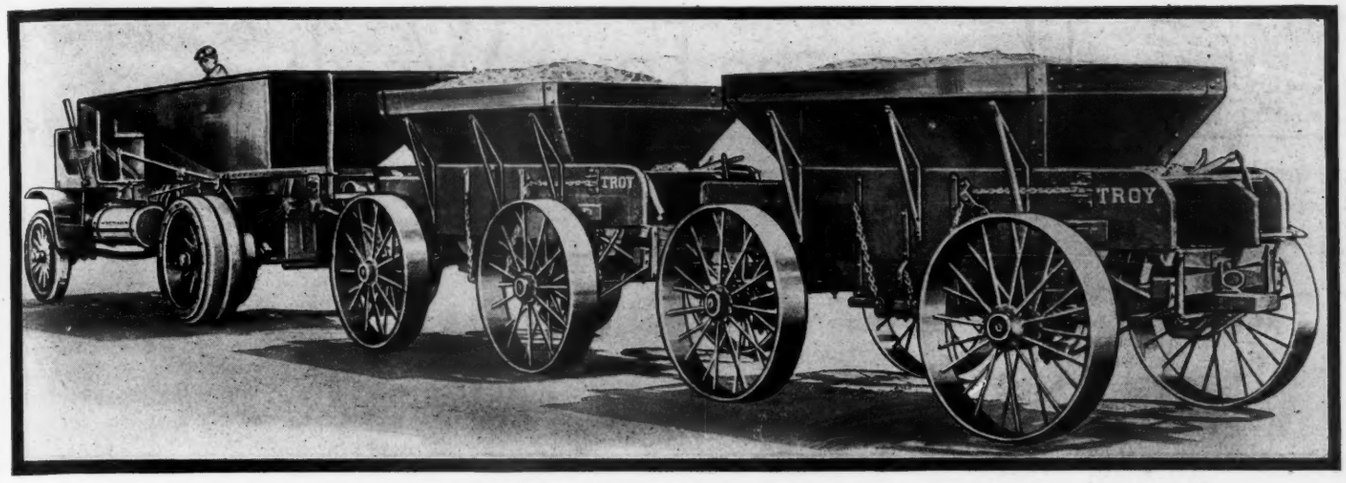
The speed of a motor bus is to that of a street car as 9 is to 8 and it takes about sixteen motor buses to do the work of nine street cars, since the motor buses seat fewer but have greater speed. On every point the motored vehicle has been shown to be superior to the horse.

NEW WHITE DUMPING BODIES

The new White heavy service dump trucks are especially interesting, and to all appearances mark another step in advance in the construction of this quick unloading type of truck for heavy use. This type of body is operated by screw in a very ingenious manner, one dumping to the side, the other with rear dump.



FLEET OF BAKER ELECTRIC TRUCKS USED BY THE HEINZ COMPANY



KNOX 6-TON TRUCK HAULING TWO TRAILERS IN ROAD-MAKING WORK

the usual way through side chains. The reduction between the pinions and the sprockets is 12 to 1.

The jackshaft which is made by the Weston-Mott concern is of the live type. Ball bearings are mounted on the third-arms, while on the sprocket ends, Hyatt roller bearings are used. All parts of the jackshaft and the brake rods and their fastenings are easily reached on removal of the body floor boards. This also applies to the reaching of the cells of the storage battery.

Weston-Mott axles are used throughout, the rear axle construction being of the dead type. The front axle is of I-beam section, dropped in the center, the dimensions of the section being 1½ by 2½ inches.

Elliptic springs are used throughout, the sizes being 36 inches in length by 2 inches in width for the front and 40 inches by 2 inches for the rear. Two sets of brakes are used, both operating by means of foot pedals within easy reach of the driver and forward of the steering column. The service brakes are internal expanding and act on the jackshaft, the drums being mounted between the pinions and the frame is of steel channel section, having a height of 4 inches. It is 147 inches long by 32 inches wide. A 2-inch increase in wheelbase is given the new 1-ton truck over that of the ½-ton model.

The M. and P. company consider the delivery type of body to be its standard, but will equip either this new machine or the ½-ton type with any type of body specified. Although the overall dimensions will vary with the type of body used, with the delivery body, the overall length of the 1-ton truck is given at 158 inches and the overall width at 68 inches. The height from the ground to the top is 91 inches. As to the loading space afforded by the 1-ton truck, there is a length of 100 inches back of the seat, a width of 45 inches and height of 58 inches. These figures are for the space within the body. The weight, when fitted with delivery body is about 3,800 pounds.

USES TRUCKS BUILDING ROADS

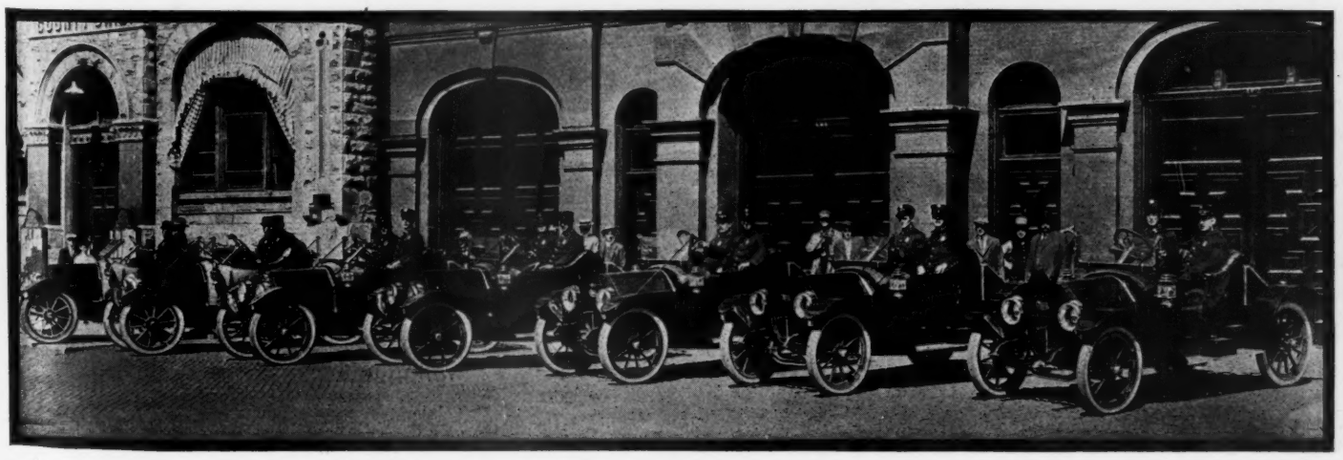
Modern road building is making good use of the motor truck and is introducing a new idea in economical motor traction by means of the trailer trucks, as shown in an accompaning illustration of a Knox 6-ton truck hauling two trailers of 3 yards capacity each. Both truck and trailers are fitted with special quick-dumping bodies to facilitate delivery. Two of these road trains hauled by Knox trucks have been in active service in Sioux City, Iowa, for the past year and have delivered an average of 44¼ yards of material per day, a distance of 3½ miles during a busy season.

The contractors who use this method of hauling road material estimate that it would have required over ten two-horse teams to do this amount of work, while the cost by horses would have been over twice as much. Grades varying from 3 to 7½ per cent were negotiated without difficulty.

FEDERAL CLIMBS MT. WILSON

The Federal claims the honor of being the first motor truck to make a mountain climb, by reaching the summit of Mount Wilson in California at an altitude of 5,700 feet. E. Roger Stearns, vice-president of the Standard Motor Car Co., Federal agent in Los Angeles, piloted a 1-ton Federal truck with a full capacity load to the summit of Mount Wilson over the old toll road, a trail used by the burro caravans.

The trip from Los Angeles to Pasadena was over one of the worst roads in the country, it being rough, full of boulders and very irregular. From Pasadena to the observatory at the summit of Mt. Wilson is 14 miles and to cover this distance Stearns drove the loaded Federal to a height of 5,700 feet, with the gradometers on most inclines registering a pitch of 20 per cent.



SEVEN CARTERCARS WHICH ARE BEING USED BY BATTALION CHIEFS OF MILWAUKEE FIRE DEPARTMENT

From the Four Winds

ALCO TRANSCONTINENTAL TRUCK IN FAR WEST

PENNSYLVANIA Has 53,000 — The Pennsylavnia state department has passed the 53,000 mark in motor tags. The demand for licenses is keeping up steadily.

St. Paul Has Cement Road—Polander road, in the southeast part of St. Paul, has been rebuilt of concrete, 14 feet and 4 inches thick, on a subsoil of clay and gravel well rolled. This is the first piece of concrete in Ramsey county.

New Connecticut Road—James McElroy, division engineer of the Connecticut highway commission, has started work on the projected new road leading from Danbury to the New York state line. This road is to be of gravel and will cover a much greater distance than if it were to be of macadam. Another piece of new construction which is promised for an early start is the filling in of the gap in the state road between Danbury and Norwalk that has been a terror to motorists this spring.

Canadians Trying Concrete—Concrete is to be used in the construction of a motor road from Toronto to Hamilton, Ont. There are 150 miles of roads in the county system and the annual cost of new construction and maintenance runs between $35,000 and $50,000. The road superintendent has worked out a plan whereby an expenditure annually of $32,000 for 30 consecutive years would cover the entire county with 200 miles of concrete road which would cost less than $500 to preserve.

Kerosene Failed to Work—The new combination hose and chemical motor wagon installed in the Rockland, Mass., fire department last week did not make a very good showing on one of its first trips, when it was called upon to respond to a fire at Hanover, but the fault was not with the wagon. Someone filled the gasoline tank with kerosene by mistake and the wagon started off in fine style but was stalled half way to the fire. It was impossible to get it going again and it was towed back to the fire house. An examination revealed the trouble and the department officials are trying to learn who is responsible for the mistake.

Seattle Posting Signs—Every crossroad on every highway of any importance in King county, Washington, will have been marked by signs by the end of this week by the Automobile Club of Seattle. More than 300 signs giving the direction to the principal cities on the particular route, and the distances, have been set up on posts, and there remain but a few roads now to be marked. The signs are 15 inches square.

Ironton Starts a Club—A meeting of the motorists at Ironton, O., and surrounding country was held recently, when a motor club was organized. The new organization will be known as the Ironton Automobile Club. The motto and purpose of the organization is good roads and to further the interests of motorists. The club will also urge the passage of a traffic ordinance by the city council of Ironton. Judge Corns was named temporary president and S. W. Boothe secretary.

After Delaware Valley Route—A campaign is now being waged by the Touring Club of America to combine motorists in Pennsylvania in a petition to the legislature of that state for an appropriation sufficient to co-operate with the state of New Jersey in the purchase of all toll bridges over the Delaware river. New Jersey has already made an appropriation, not to exceed $500,000, for the purchase of its share of these bridges, and it is now necessary to get a similar appropriation from Pennsylvania to make the plan effective. The Touring club hopes to bring sufficient pressure to bear at the next session of the Pennsylvania legislature to pass the appropriation bill. This move will fit in very nicely with the plan of New Jersey to next year complete a fine new highway along the banks of the Delaware from Trenton to the Delaware Water Gap and from there to Port Jervis, on the Jersey-New York state line, thus providing a magnificent boulevard 112 miles along through the picturesque Delaware valley.

Ruling on Sold Cars—The secretary of state of California has issued a statement calling attention to the law whereby persons who have sold their motor cars are still subject to be taxed for them unless they have had their car transferred to the new owner in the regular way through the office of the motor license department.

Magnolia's Many Cars—It is doubtful if there is another summer resort of the size of Magnolia, Mass., on the famous north shore, where there are so many motor cars in use. Now that the season is on, there are about 400 there, and more than 60 per cent of the states are represented, according to a garage man who looks after many of the summer residents' wants. The town itself is one of the smallest in the state, and in summer the population takes a big jump.

Judge Suggests Regulations—As a result of many narrow escapes and some serious collisions, Judge Edward C. Battis, of Salem, Mass., has recommended to the city authorities that a change should be made in the manner of allowing motor cars to pass through the city, and that some of the streets should be made one-way thoroughfares. Many of the streets are very narrow and there have been some bad accidents that would have been avoided had there been one-way streets.

Mitchell Will Mark Road—The Mitchell-Lewis Motor Co., of Racine, Wis., has offered to donate all road signs necessary to mark the new Illinois division of the transcontinental route, which runs from Chicago across Illinois to Clinton, Ia. The route will be marked by means of bands painted on telephone poles, but no provision was made for signboards at crossroads. The Racine car builders immediately offered to furnish the boards and is now having them prepared for erection.

Penn Paying for Road Work—Heavy payments for appropriations in behalf of road improvements will be made by the fiscal authorities of Pennsylvania between now and the first week in August. The state will soon pay $250,000 to close to 1,300 townships which are entitled to receive money under the act providing that 50 per cent of cash road tax collected shall be given by the state as a bonus. The Pennsylvania highway department is experiencing some difficulty in securing workmen on the various road improvements. Sixty-five men quit work this

week on the roadway through the Lewistown Narrows, near Harrisburg, because they had secured better jobs elsewhere. About 500 men are needed to finish the Lewistown Narrows work.

Can Stand Five Minutes—Rochester, N. Y., now has a law forbidding motorists to leave their cars standing in business streets for more than 5 minutes at one place without receiving or discharging passengers. The law is being strictly enforced and two arrests have been made.

Blue Bands for Illinois Road—Advices from E. B. Wharton, of the Ottawa Commercial Club, and M. L. O'Dea, of the La Salle Business Men's Association, convey the information that within a very short time the entire route between Davenport, Ia., and Chicago will be marked with the blue band.

New Clubs in Minnesota—Thirty motorists of Cass county, Minnesota, have organized the Cass Lake Good Roads Club. Chris Burns is president and N. E. Jondahl is secretary. The road is to be improved around the end of the lake from Pike Bay to Bena. The Windom Automobile Club has been organized and will join the Minnesota association. Officers are: President, R. D. Collins; vice-president, L. Sagge; secretary, T. A. Perkins; treasurer, H. E. Hanson. The main effort will be to promote good roads.

State Official at Bretton Woods—Motorists from other states who go touring through the White mountains of New Hampshire this summer, and who wish to stay more than the allotted 10 days in the state, can get a 3 months' registration now at reduced rates. Those who tour through from the north and visit Bretton Woods will not need to go to Concord to the office of the secretary of state, for that official has appointed a deputy with headquarters at the Mt. Washington hotel to issue registration, as the great majority of tourists visiting the state spend some time at the Bretton Woods resorts.

Going to Mammoth Cave—A sociability run and a good roads meeting, to be held at Mammoth Cave, Ky., is being promoted by members of the Louisville Board of Trade, the Commercial Club, the Retail Merchants' Association, the Advertisers' Club and the Louisville Automobile Club. Governor Hooper of Tennessee has promised to be present. If present plans are carried out runs will be conducted to the cave from both Louisville and Nashville and the number of tourists will be increased en route, as motorists are expected to join the good roads advocates all along the route.

First Winnipeg Entry—Bohn Fawkes has made the first entry of a car for the Winnipeg tour, a Marmon which won the high score and the Journal touring car trophy in the third annual tour last year at Helena. Other entries are expected in a few days of an Apperson, McFarlan six, Oldsmobile Limited, Colby, Hupmobile, Mitchell, Halladay 30, Rauch & Lang, Cole, Flanders 20, Havers six, and Maxwell. A Hupmobile is No. 2 entry. The Minneapolis Daily News has offered a $400 trophy for the roadster class.

Starts Concrete Work—The first concrete for the new concrete roads system in Milwaukee county, Wisconsin, was poured on July 15 and it is expected that at least 5 miles of the new country pavement will be laid before the end of the year. The longest stretch planned for improvement at this time is 4½ miles of the Kilbourn road, from Milwaukee city limits to the county line. This road is part of the Chicago-Milwaukee improved highway, being constructed under the direction of the Chicago-Milwaukee Good Roads Association, fostered by the Chicago Automobile Club, Milwaukee Automobile Club and Milwaukee Citizens' Business League.

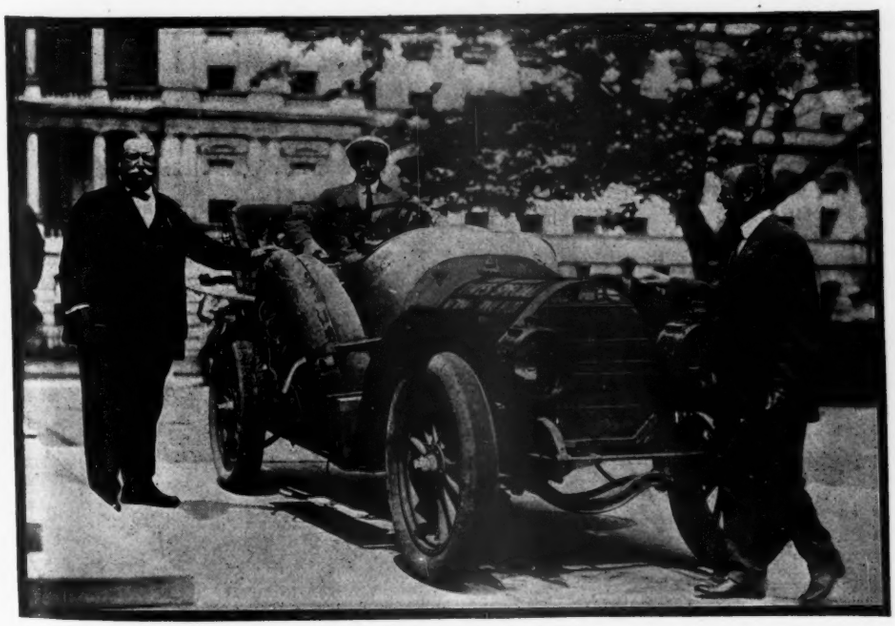
Must Avoid Street Cars—A strict vehicle ordinance has been adopted by the city council of Columbus, O., which compels all vehicles, including motor cars, bicycles, motor cycles and horse-drawn vehicles, to come to a full stop at crossings while street cars are discharging their passengers. At the last moment an amendment was tacked on excepting the congested business sections. This was done in order to relieve the congested conditions of traffic. Heavy fines are provided for its violation.

Minnesotans Make Tour—The Automobile Club of Benson, Minn., had its second annual sociability tour June 23-24, from Benson to New Ulm and back the next day. Arrangements were made successfully for entertainment on the route, and the second day's trip was through the old historic Indian massacre country, including Fort Ridgly. The entries were nearly fifty cars, with more than 150 passengers. Banners were carried with the Benson $1 guide post displayed. Trustee E. L. Thornton of the state association is president.

Another Illinois Club—The Vermilion County Automobile Club has been formed by Illinois motorists. Officers were elected as follows: President, Francis Barton; vice-president, J. W. Webster; secretary-treasurer, James A. Meeks; directors, Herman Hegler, Carroll Williams, M. J. Woolford, W. G. Hartshorn and C. U. Feldkamp. The object of the organization is to improve the roads, the adoption of traffic regulations and the welfare of all persons who own, drive or deal in cars. Three hundred members have been secured.

One More Booster—The McDonough County Automobile Association was given articles of incorporation in Illinois this week, the object being to improve the roads of that county. The incorporators are Joseph Bacon, T. H. Downing and Edward C. Wolfe. The headquarters of the association will be in Macomb. This is the first of the inland motor clubs of Illinois to be incorporated. A strong effort will be made to secure the co-operation of every car owner in McDonough county in the campaign for hard roads.

Cities and Towns Warned—The Maine Automobile Association has notified the selectmen of Scarboro and the city officials of South Portland that certain stretches of road within their jurisdiction are not in a safe condition for travel and that if any damage results to motorists or their machines while passing over the highways named suits for damages will be instituted. The notification is the result of many complaints received from motorists who were forced to go through those places going to and from the Old Orchard races. It is believed this warning will have its effect.



OCEAN-TO-OCEAN LOCOMOBILE PATHFINDER CHECKED IN AT WASHINGTON BY PRESIDENT TAFT

Among the Makers

NORTON Packard's Truck Manager—C. R. Norton has been made manager of the truck department of the Packard Motor Car Co. to succeed J. T. Langhorn, resigned.

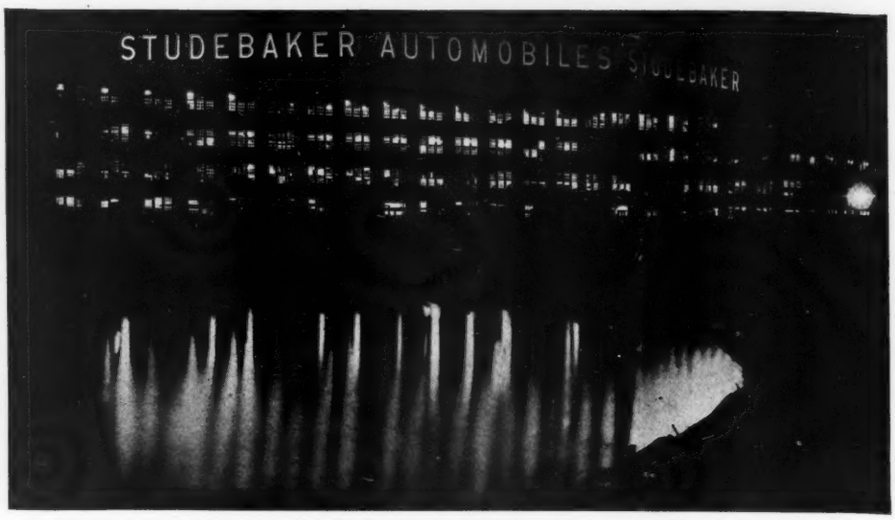
Start New Tire Company—A. A. McKain, E. J. Holliday and A. C. Ayres have organized the Indianapolis Tire Co. in that city and will establish a factory for the manufacture of motor car tires. The company has been incorporated with an authorized capitalization of $300,000. Plans of the company have not been made public.

Pope Director Resigns—Colgate Hoyt, of New York, banker, has resigned as a director of the Pope Mfg. Co., of Hartford. He states that the fact that the meetings of the board of directors are now held at Hartford instead of New York prevents his giving the necessary time to travel back and forth to meetings.

Davenport Motorizing—Convinced of the economy and efficiency of motor fire-fighting apparatus, Davenport, Ia., has decided to dispense with the old-style horse-drawn apparatus and has decided to purchase an 80-horsepower motor tractor, which will be used in propelling the aerial trucks, an 80-horsepower combination hook, ladder and hose car, and a special city service motor hose wagon.

Confusion of Names—Lest some confusion arise in trade circles over the report of bankruptcy of the Metzger Motor Car Co., of Denver, Colo., it is stated by E. Le Roy Pelletier, advertising manager of the Everitt Motor Car Co., formerly the Metzger Motor Car Co., Detroit, that there is no connection whatever between the Detroit and Denver concern, save that of manufacturer and dealer. The Denver concern chose to use a name similar to that of the parent concern, and the bankruptcy proceedings were instituted by the manufacturer to collect moneys due him, it is asserted.

Fire Show for New York—On Wednesday, October 2, there will open in Madison Square garden, New York city, to continue till Saturday evening, October 12, an exposition of modern apparatus for the prevention and extinguishment of fires. The exhibition is to be held in conjunction with an international conference of fire department officials representing many of the larger cities of the world. Many manufacturers of motor fire apparatus will be represented in the exhibition, which will include fireproof building construction, fire alarm systems, automatic sprinklers, fire escapes, and, in fact, every device and manufacture in the fields of fire prevention and extinguishment. Daily conferences will be held, where architects, builders, engineers, insurance men and fire department officials from all over the world will read and discuss papers on pertinent subjects. Mayors of many of the principal cities of the United States have appointed their fire chiefs or commissioners as delegates to the conference and exposition, which, in view of the plans now forming to motorize the fire departments of many of the big cities of the country, have been most opportunely timed.



STUDEBAKER'S BIG ELECTRIC SIGN IN DETROIT

Devault Joins Federal Forces—A. L. Devault, formerly with the United States Tire Co. in Detroit, has joined the forces of the Federal Rubber Mfg. Co. as manager of its soon-to-be-established Detroit branch.

Young Electric Co. Organized—Articles of association have been filed by the Young Electric Co., of Detroit, with a capital stock of $50,000. The stockholders are Philip Young, C. F. Tomlinson, G. W. Caverly and J. L. Marcero. The new concern is to manufacture storage batteries both for electric vehicle use and for general purposes.

Becker Chosen President—August Becker has been appointed president and E. J. Barcalo treasurer of the Lippard-Stewart Motor Car Co., of Buffalo, to succeed T. R. Lippard and R. G. Stewart, founders of the concern, who have withdrawn from the company to conduct the business of the Stewart Motor Corporation, recently incorporated to manufacture motor trucks of light capacity.

To Make Canadian Bakers—The Baker Motor Vehicle Co. of Canada, Limited, was recently organized at a meeting held at Walkerville, Ont. The following officers were elected: Hiram H. Walker, Walkerville, president; J. J. Coburn, Walkerville, secretary; W. C. H. Burnett, Detroit, treasurer; R. C. Norton, Cleveland, vice-president; Hiram H. Walker, J. H. Coburn, W. C. H. Burnett, O. B. Henderson, F. R. White, R. C. Norton, George H. Kelly, Cleveland, directors. It is the intention of this company to start operations immediately, and it hopes to be able to build both pleasure and commercial electric vehicles in the near future. The company will manufacture the models now being made by the Baker Motor Vehicle Co., of Cleveland, O.

New Company in Maine—The Auto-Cart Co. has been organized in Maine to build commercial vehicles at Hallowell. It has the financial support of the leading business men of that city, also of Augusta, Gardiner and other Maine cities. Work will be commenced shortly on the vehicles.

Brown Incorporates—Will H. Brown, president of the Mais Motor Truck Co., and Carl H. Wallerich, who have organized the Brown Commercial Car Co. at Peru to manufacture an internal gear-driven truck of 1,500 pounds capacity, has incorporated the company with $100,000 capitalization. Business interests of Peru have subscribed for $51,000 of the stock. The directors of the new company are R. H. Bouslog, R. A. Edwards and Max Kraus, all of Peru, and Mr. Brown and Mr. Wallerich.

Fair Show at Toledo—The Lucas County Fair Association will pull off the next big motor car show in this section, including Toledo. The show will be made a feature of the regular annual meeting in September, and promises a monster exhibition of motor cars and a full line of accessories. The management has already succeeded in closing almost every firm in Toledo for space, and the feature will be staged in a large circus tent provided for the occasion. The main tent will be 90 feet by 190 feet, and several smaller tents will be provided for accessories and motor cycle exhibits. Heretofore only a few cars have been exhibited at the Lucas county fair, one of the largest meets of its kind in this section; but the general prosperity of the farming class, together with the

and Dealers

growing favor of the motor car in the rural districts, has led to the conclusion that an enormous trade can be consummated at the regular fair this fall.

Death of Texas Dealer—I. H. Dillon, manager of the Dillon Automobile Co., of Dallas, died July 20 at Mineral Wells, Texas. Mr. Dillon was one of the best known dealers in Texas. He was 47 years of age and for the past 7 years has been manager of the company in Dallas.

Another Addition to Michigan Plant—Ground is to be broken this week for another addition to the plant of the Michigan Buggy Co. that will add 50,000 feet of floor space. This addition will immediately adjoin the main factory building to the north. It will be of steel and cement, of modern construction, four stories and basement. The basement will be added to the space for the service department.

Studebakers' Big Sign—Tourists who annually visit Detroit find an additional feature of interest along the river front this year in what is said to be the largest electric sign in existence and the largest ever erected outside New York. The sign decorates plant 3 of the Studebaker Corporation's system. This plant is located on the river bank at the corner of Clark and West Jefferson avenues, and is admirably situated for such a display. "Studebaker Automobiles Studebaker" is the lettering, blazing forth in 340 feet of length and with its capitals 10 feet high. The sign is plainly legible from Canada and along the river for more than a mile and a half, and can be plainly seen from Belle Isle and Fort Wayne, at opposite extremes of the river. Just 2,374 5-watt, 11½-volt Mazda lamps are used for illumination. Light is furnished by a 230-volt current, stepped to 11½ volts through thirteen low-voltage 1,000-watt transformers, each of which takes care of three letters of the sign. The sign was built under the direction of E. H. Wilsher, chief electrician of the Studebaker Corporation.

Ignition Merger—The Knop Battery Co. and the American Ignition Co., both of Detroit, have been consolidated under the name of the Electrolamp Co. The officers of the new concern are W. J. Sculley, president; N. G. Begle, vice-president; C. R. Baxter, secretary, and R. L. Aldrich, treasurer. In addition to the line of storage batteries and spark plugs manufactured by the Knop company a new type of motor cycle electric lamp will be made.

New Self-Starter Company—With an authorized capital of $300,000, the Jenney Electric Starter Co. has been organized and incorporated at Indianapolis and a factory established at Illinois and South streets in that city. Those interested in the company are Charles D. Jenney, William L. Taylor and Russell Willson. The company will manufacture an electric self-starter for motor cars, motor boats and aeroplanes, as well as for all kinds of gas engines.

Addition to American Plant—The American Motors Co., of Indianapolis, has just completed a three-story brick and steel addition to its plant No. 2. It was found necessary at the beginning of the season of 1912 to practically double factory facilities. Again, just before the 1913 announcement was made plans were completed and the foundation laid for a further increase in factory space. This new structure, which is now completed, is a three-story building, of fireproof construction, and is entirely inclosed with glass. The building is 85 by 120 feet, providing about 30,000 feet of floor space. This will give about 100,000 feet of floor space at plant No. 2. One piece of machinery that is just being installed is a 36-ton hydraulic press to be used in connection with the sheet metal work and shaping the bodies.

PLANT OF KEETON MOTOR CO. AT WYANDOTTE, MICH.

Gives Up Vanguard Line—The selling arrangement that exists between the Emil Grossman Co., of New York city, and the Vanguard Mfg. Co., Joliet, Ill., for the sale of the Vanguard shields, will expire on August 1, 1912, and will not be renewed. The Grossman company intends to devote its energies to the manufacture of Red Head plugs and other of its specialties.

New Goodyear Building Ordered—Manager J. L. Jordan, of the Goodyear Tire and Rubber Co. Minneapolis branch, after consultation with Western Sales Manager A. F. Osterloh, has selected a site for the new branch house and plans are being drawn. The building is to be at Twelfth street and Hennepin avenue, and the contract has been let for a $65,000 structure. It will be 57 by 167 feet, on leased ground. The building will be three stories and basement.

Dunkirk, N. Y., Chosen—Plans and specifications for the factory buildings of the Niagara Gasoline Motor Co., which concern has decided to locate in Dunkirk, N. Y., have been completed and work on the new structures will be started in a few days. This company decided to locate its plant in Dunkirk if a $50,000 stock subscription could be raised by local citizens. The amount of $46,000 already has been raised, so it is a matter of only a short time when operations will be started.

Another Ford Plant—The Ford company has ordered plans in Minneapolis for its northwestern branch, at Fifth street and Fifth avenue N., to cost, completed, $250,000 to $300,000. The ground area will be 42,000 square feet. It has 340 feet of concrete in view. The building will be four stories at present, but the foundations will carry eight stories. The structure will be utilized for assembling, display, sales and shipping as well as service. The exterior will be of brick, with terra cotta trimmings.

Will Stay in Clintonville—The Four Wheel Drive Automobile Co., of Clintonville, Wis., manufacturing the Four Wheel drive car, voted at its annual stockholders' meeting to continue the plant in its present location and reject all offers of removal. The best offer was that of Appleton, Wis., business men, who agreed to purchase $100,000 of the capital stock and provide shops. The company will begin at once to enlarge its Clintonville works and start its first regular issue of cars, including eleven commercial cars in 1½ to 2-ton size for the United States government war department. Authority has been given to place $25,000 of the treasury stock on the market for purchase by any resident of Clintonville. The capitalization is $250,000.

Development Briefs in Accessory Field

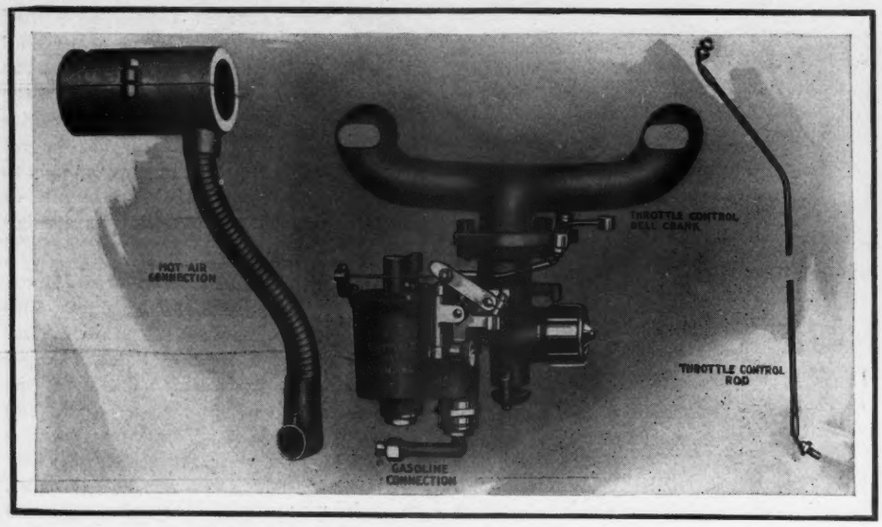


FIG. 1—RAYFIELD-FORD EQUIPMENT

Klaxet, the $100 Name

AFTER receiving 10,000 suggestions for a name, the Lovell-McConnell Mfg. Co., of Newark, N. J., has awarded the offered $100 to the first man to suggest the name of Klaxet for the newest addition to the family of warning signals manufactured by the Newark concern. The device is very similar to the original Klaxon and its small brother, the Klaxonet. The new signal is almost a replica of the Klaxonet, differing in size and elaborateness, but identical in quality of tone and principle of operation. It operates by means of an electric motor, and is sold with the same guarantee as its larger brothers. The price is extremely low, in fact, the Klaxet is said to be the lowest-priced motor-driven signal on the market. The first deliveries will be made in September.

White Swan Camp Mattress

Those hardy motorists who prefer camping out to availing themselves of the questionable country hotel accommodations on summer tours will be interested in a new camp mattress that is being manufactured by the Tom B. Burnett Co., Dallas, Tex. This mattress, which is shown in Fig. 7, is not a pneumatic mattress, and therefore there is no danger of punctures at the wrong moment, and there is no clammy feeling, as in the pneumatic variety. It is built up of cotton felt, well tufted, and rolls up into a very compact bundle. It is made in sizes of from 2 feet to 3.5 feet in width, and 6 feet 6 inches in length, weighing from 16 to 25 pounds. They are sent from the factory in substantial canvas bags, and when rolled up, may be conveniently stowed away in the tonneau of a motor car.

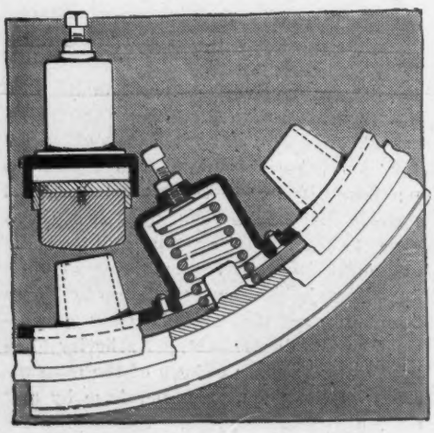


FIG. 2—BANG'S ELASTIC RIM

Benedict Nickel for Trimmings

For ornamental work where brass or nickel on brass is now used, such as radiator casings, windshield tubing, control and dash accessories, the American Brass Co., of Waterbury, Conn., has produced a white metal for which broad claims are made. It is pure white, durable because it is solid, and is said to be highly non-corrosive. It is manufactured in all widths and gauges, and in the form of seamless tubes, moldings, rods and wire; also in ingots, which will make sound castings, matching the color of the rolled or drawn material for stock parts.

Self-Contained Gasoline Gauge

The gauge shown in Fig. 3, which is the product of the Specialty Sales Co., of Racine, Wis., consists of a cylindrical standpipe which is designed to be applied within the gasoline tank of a motor car and having a dial affixed to its upper end. Within the standpipe is a center staff, revolved by a sliding float, whose revolution is controlled by an arm which engages a spiral slot, running from top to bottom of the standpipe. A hand is mounted on the upper projecting end of the center staff which registers the height of the float on the circular dial, the slot being so cut that

New Hot-Air Intake for the Fords—Smallest of Klaxon Signals—White Swan Camp Mattress—Benedict Nickel

the hand has a sweep of 180 degrees. The dial is calibrated, as shown in the drawing, Fig. 5.

To apply the gauge to the tank, it is necessary to cut a hole in the latter, which is done by means of a special cutting tool provided with the outfit. The tube then is inserted up to the collar or flange and sealed with the solder. Standpipes are made in all lengths, to adapt the instrument to all depths of tanks, and due to the extreme simplicity of the device, it cannot fail to be accurate.

Bangs Spring Rim

For use with solid tires, which may be of standard make and mounting, the Bangs spring rim is manufactured by E. D. Bangs, of Milwaukee, Wis. It consists of a steel felloe, in which a solid floating rim telescopes. Steel sockets are provided for the spokes of the wheel, between which spring chambers are mounted. These are in the form of inverted cups, riveted to the steel felloe. Within each

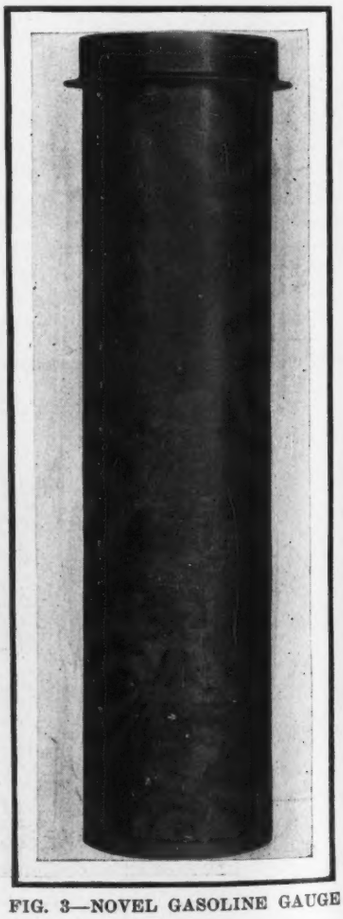


FIG. 3—NOVEL GASOLINE GAUGE

Novelties for Use of the Motoring Public

Simple Vulcanizing Outfit—Spring Rim for Solid Tires—Compound for Cleaning Brass Work—Self-Contained Gauge

cup is a heavy coil spring, seated on its inner end on an adjustable spring seat, which is adjusted by means of a set-screw and lock nut, and at its outer end against a spring guide, which is integral with the floating rim. To the latter is applied a tire in such manner as is deemed appropriate. Road shocks are absorbed by the flexure of the springs, which bear outward equally at all points on the rim. By means of the spring adjustment, the spring tension may be adapted to any varied condition of traction or load, by simply screwing in or out ten or twelve set screws. A removable ring, forming one side of the telescopic felloe, may be removed for replacement of springs or change of tires, by the removal of a few retaining screws which requires but a short time.

Latest Ford Accessory

The latest of the prolific family of Ford improvement accessories, the Rayfield-Ford carbureter equipment, complete as shown in Fig. 1, has just been brought out by the Findeisen & Kropf Mfg. Co., Chicago. The outfit consists of a regular Rayfield carbureter, with a special throttle control bell crank, an especially designed manifold, a hot-air fitting, dash adjustment, special gasoline connection and a ball-jointed throttle control rod. The carbureter is the model H, which is of the single-jet, non-waterjacketed type, which with the hot-air fitting is claimed to give results superior to the regular Ford carbureter. The outfit may be installed by a novice in a very short time, there being no holes to drill or any changes to be made in the motor whatever, beyond the substitution of the special manifold with its attachments, for the regular equipment. The manifold is clamped to the cylinders by the regular Ford clamp in the usual manner. The complete outfit is to be sold for but $3 more than the price at which the carbureter alone is listed.

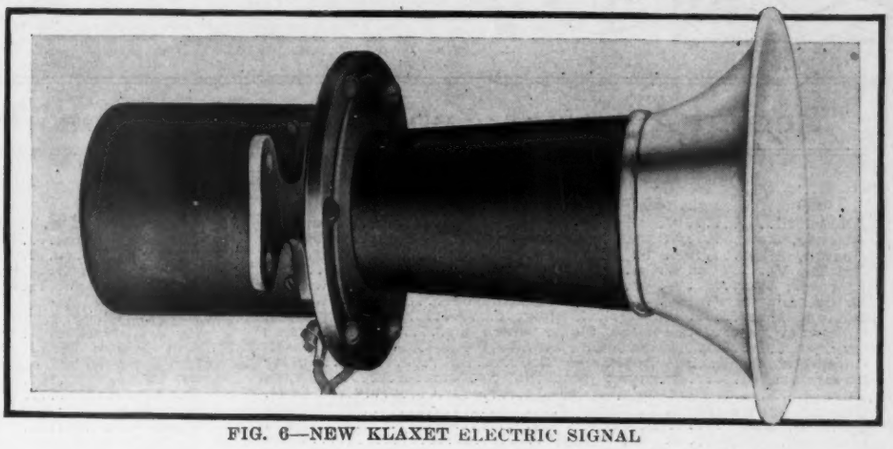


FIG. 6—NEW KLAXET ELECTRIC SIGNAL

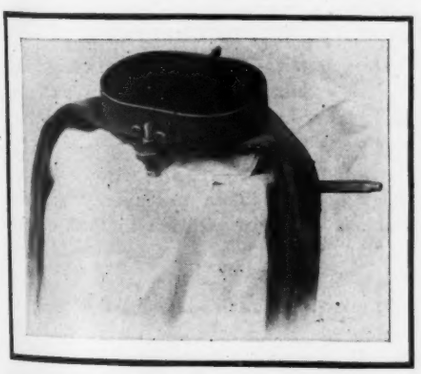


FIG. 4—ZENITH VULCANIZER

Zenith Vulcanizer

Open-flame vulcanizing seems to solve the question of roadside tube repairs, for as is well known, cold patches are at best a makeshift, and while the acid cure cold process usually is satisfactory, neither system is to be compared with actual vulcanization. This has formerly required the services of an expert with an extensive equipment. With the new open-flame devices, one of which, the Zenith, manufactured by the Zenith Factories Co., of Minneapolis, Minn., is illustrated in Fig. 4.

The device consists of two metal castings and two thumb screws, the upper piece consisting of a cup provided with radiation flanges. To vulcanize a patch on an inner tube, the patch is prepared in the same manner as for a hand patch, except that no cement is used, and specially prepared raw rubber is used for the patch. The tube then is clamped in the vulcanizer, and a measured quantity of gasoline burned in the cup. The outfit is packed in a box, with a supply of raw rubber, a pair of scissors, emery cloth, simple directions, and a 2-ounce gasoline measure. To parodize the Kodak slogan, the experience is in the measure.

Liquid Cleaning Compound

Applied to a soft cloth and rubbed on the coachwork of a motor car, Matchless liquid gloss, a product of the Standard Oil Co., is claimed to remove dust and dirt and because of certain beneficial ingredients in its composition, imparts a luster to the finish that soap and water do not, it is said. It may be applied to the cushions and top with equal benefit, as it contains no harmful ingredients and has strong disinfectant properties. It also is recommended for glass, such as the windshields.

FIG. 5—DIAL OF AUTO GAUGE

FIG. 7—WHITE SWAN MATTRESS ROLLED AND EXTENDED

Brief Business Announcements

Recent Agencies Appointed by Car and Truck Manufacturers

PLEASURE CARS

Town	Agent	Make
Alexis, Ill.	W. A. McKnight	Henderson
Atlanta, Ga.	Atlanta Auto Sales Co.	Henderson
Boston, Mass.	A. P. Underhill	Grinnell
Bristol, Vt.	W. A. Lawrence	Ford
Bloomer, Wis.	W. A. Struve	R. C. H.
Bridgeton, N. J.	W. Middleton Sheppard	R. C. H.
Boston, Mass.	James A. Binney	Henderson
Cincinnati, O.	Peerless Motor Sales Co.	Peerless
Chicago	Charles E. Hammerly	R. C. H.
Columbus, O.	Gwinn Sales Co.	Lozier
Davenport, Ia.	Newman Machine Co.	Auburn
Durant, Ia.	Hanson Auto Co.	R. C. H.
Grundy Centre, Ia.	A. C. Schafer	Henderson
Guilford, Conn.	S. B. Hull & Co.	Ford
Hartford, Conn.	H. W. Yeager	Velie
Kingston, N. Y.	Ulster Garage	R. C. H.
Kansas City, Mo.	H. F. Sundin	National
Kent, O.	J. A. Ewing and A. R. Atkins	R. C. H.
Little Rock, Ark.	G. L. Omahundro	Marmon
Los Angeles, Cal.	J. W. Willcox	Henderson
Newark, N. J.	Service Motor Sales Co.	Henderson
Northampton, Mass.	T. J. Collins	R. C. H.
Nashua, N. H.	City Garage Co.	Haynes
Niagara Falls, N. Y.	Niagara Falls Auto Transit Co.	R. C. H.
Missoula, Mont.	J. J. Deakin	Henderson
Mattoon, Ill.	Mattoon Refrigerating Co.	Henderson
Mt. Sterling, O.	H. Clay McKee	Regal
Osborne, Kan.	F. M. Cole	R. C. H.
Philadelphia, Pa.	Johnson Motor Car Co.	Henderson
Puerto Rico	G. A. Besosa	Marmon
Revere, Mass.	Walter T. White	Ford
San Benito, Tex.	Whittlesey Garage & Machine Co.	Henderson
San Francisco, Cal.	Bonnheim-Moore Motor Car Co.	Henderson
St. Louis, Mo.	Model Automobile and Sales Co.	Henderson
St. Louis, Mo.	Weber Imp. Co.	R. C. H.
Strasburg, Ill.	John Bauer, Jr.	R. C. H.
Shamokin, Pa.	George W. Turner	R. C. H.
Springfield, Mass.	Forest City Garage	Henderson
San Antonio, Tex.	Lawton Motors Co.	R. C. H.
Wareham, Mass.	B. Burleigh Sisson	Ford
Windsor, Ont., Can.	F. S. Evans	King
Waterloo, Ia.	Blackhawk Auto Co.	Henderson
Washington, D. C.	Matheson Motor Co.	Henderson
York, Pa.	York Rubber Tire Co.	Cutting
York, Pa.	Auto and Truck Sales Co.	Hudson

TRUCKS

Town	Agent	Make
Canton, O.	N. J. Cummins	Modern
Columbus, O.	M. P. Murnan	Alco
Covington, O.	Crampton and Ulery	Modern
Hartford, Conn.	Edred W. Clark	Modern
Pittsburgh, Pa.	West Penn Automobile Co.	Modern
Poughkeepsie, N. Y.	Cleveland Garage Co.	Modern
Providence, R. I.	Motor Service Co.	Veerac
Providence, R. I.	Harris Brothers Auto Co.	Piggins
Springfield, Mass.	Morse-Readio Auto Co.	Modern
Topeka, Kan.	J-A-R Motor Co.	Lincoln
Washington, Pa.	Mansfield Auto Co.	Modern

BRANFORD, Conn.—A. J. McCutcheon has just opened a new garage here.

Chilton, Wis.—Robert Hippe is organizing a garage company and work already has been started on a $12,500 building.

Toronto, Can.—The Automobile and Supply Co. has secured the distributing agency in the province of Ontario for the Chalmers.

Spokane, Wash.—A. H. Brown, manager of the Spokane branch of the Studebaker Corporation, has been appointed to fill the vacancy created by Mr. Rose's retirement.

Toronto, Can.—The Matheson Automobile Co. has been appointed Canadian sales agent for the Norwalk. This company also is Canadian distributor for the Matheson.

Bristol, Conn.—The Barker Automobile Co., of Bristol, has given out the contracts for its new garage on Riverside avenue, which is to be a brick structure, one story high, with dimensions 100 by 60 feet.

Cincinnati, O.—The Heilman Motor Car Co., Blue Rock and Hamilton avenues, general agent for the Regal cars, has placed a subagency for the Regal with H. Clay McKee & Sons, at Mount Sterling, Ohio.

Toledo, O.—A new company is being organized at Toledo for the purpose of handling motor cars in northern Ohio. The concern, which will be incorporated within a few days, is headed by Charles P. Landman, formerly of the Blevins Auto Sales Co. It will open sales rooms on Madison avenue about September 1. A deal has already been closed for the Flanders electric agency.

Detroit, Mich.—A. J. Carrier has been appointed southern wholesale representative for the Hupp-Yeats electric.

San Diego, Cal.—J. A. McCaddon, representative for the Cadillac Hupp-Yates machines, is constructing a new home to cost $15,000.

Hampton Beach, N. H.—F. L. Beistol, of Portsmouth, N. H., has just opened a large garage at this place, which is one of the big summer resorts of New Hampshire.

Tacoma, Wash.—The Olympic Motor Co., distributor of Olds cars in southwestern Washington, will move to its new home, 739-41 South C street, Tacoma, during the coming week.

San Francisco, Cal.—The Haynes Automobile Co. has purchased control of the Haynes Auto Sales Co., of San Francisco, and announces the appointment of W. B. Cochran as direct factory representative.

Fond du Lac, Wis.—Grant Thomas, president of the Sales and Supply Co., Fond du Lac, is preparing to engage in the manufacture of the Success oil can and container invented by T. W. Alexander, of Burlington, Ia.

Janesville, Wis.—George Decker, president and general manager of the Janesville Motor Car Co., has started work on a combination hotel and garage building, the first of this kind in Wisconsin. The first floor frontage will be divided into hotel lobby and garage offices, the garage entrances being at side and rear. The hotel will have fifty rooms and the storage capacity of the garage will be 100 cars.

Bridgeport, Mass.—C. Barnum Seeley is building a garage 52 by 104 feet on State street.

Los Angeles—Bert Dingley last week took his place on motor car row as manager of the local branch of National Motor Vehicle Co.

St. Louis, Mo.—The Cochrane Motor Sales Co. has taken the agency for the Garford truck in addition to that of the Gramm. This firm also has the Modern delivery wagon line.

Montreal, Can.—The DeVaux Motor Co. has opened a large show room adjoining its old garage at Lafontaine Park and Garnier street. It is agent for Nyberg, Detroit and Waverley.

Boston, Mass.—The Stutz Motor Car. Co. moved last week into its new salesrooms, 895 Boylston street, formerly occupied by the White, Ware & Leatherbee Co., agent for the Bergdoll.

Boston, Mass.—The Essenkay Co., Chicago, has leased the quarters in the motor mart, Boston, formerly used by the Alvan T. Fuller Co., agent for the Packard, and will be ready to do business in a few days.

Milwaukee, Wis.—M. J. Monson has been appointed general manager of the Wisconsin and upper peninsular branch of the Buick Motor Co., with headquarters at the district branch house, 162 Wisconsin street, Milwaukee. Mr. Monson succeeds Lawrence A. Brown, who died 2 months ago. He formerly managed the

Electric Vehicle Garage Co., 521 Grand avenue, Milwaukee.

Boston, Mass.—A. P. Underhill, who handles the Knox line in eastern Massachusetts, with headquarters in Boston, has taken on the Grinnell electric.

Minneapolis, Minn.—The Schacht Motor Co., of Cincinnati, will put an agency at St. Paul or Minneapolis. Louis A. Howard is in the Twin Cities from the factory looking for an opening.

Saskatoon, Can.—The Metropolitan is a new garage which has just been opened on Second avenue and Twenty-fifth street. C. L. Ackerson is in charge. He was formerly connected with the United Motor Co. in the United States.

Columbus, O.—The Broad-Oak Automobile Co., which was recently sold out to a new set of owners, has been reorganized by the election of W. J. Miller, president; Robert R. Turner, vice-president, and R. M. Weaver, secretary-treasurer.

San Antonio, Tex.—The Ford Sales Co. has been organized here with a capital stock of $5,000. Its purpose is to sell motor supplies and operate a repair shop. The incorporators are M. D. George, Clifton George and George H. King.

New Glasgow, N. S.—The Stevens Motor Co., Limited, a recently incorporated company of New Glasgow, N. S., has the agency for the Cutting for the maritime provinces. L. E. Stevens, the sales manager of the concern, was formerly with the Ramsey Motor Co., of Montreal.

St. Paul, Minn.—The Service Auto Co. has rented the garage formerly occupied by the White Bear Co., and will do a general garage and repair business. The owners are four young men, B. F. Kartak, Dean LaRoche, LeRoy Emsley and Joseph Tighe.

Minneapolis, Minn.—George B. Levy, formerly of Chicago, who has handled the Hudson in the northwest, including Minneapolis, has given up the agency, Heberly & Smith, of St. Paul, being his successors. Mr. Levy as yet has no future plans.

Montreal, Can.—Chadburn & Hunt have been appointed sole agents for the province of Quebec for the Brockville Atlas car. While the location and fitting up of a suitable show room is going on, the present offices will be used as temporary quarters.

San Francisco, Cal.—H. W. Evans, who has been connected with the San Francisco branch of the Locomobile company for the last 2 years, has been put in charge of the truck business of that company for the Pacific coast.

Spokane, Wash.—Sales Manager Benson, of the Studebaker Corporation, announces the promotion of A. H. Brown, manager of the firm's Spokane branch, to be northwestern sales manager for the company. In his new capacity Mr. Brown will have charge of the distribution of more than $2,000,000 worth of Studebaker motor cars, it is said.

San Diego, Cal.—The Tibbals-Gavin Co. has recently become the San Diego county selling agents for Havoline oils.

Toronto, Can.—Peter Union tires, which are widely used in Europe, are now handled in Canada by John N. Walford.

Watertown, Conn.—The F. H. Bronson building has been fitted up by Charles Sherwood for a public garage, the first one opened in the town.

Dallas, Tex.—M. A. Sacksteder, formerly manager, and C. H. Potter, formerly assistant manager for the United Motor Co. in Texas, have resigned their positions and will open a house for the sale of the Marion and the American cars.

New York—Appointment is announced of Fred A. Crooks as city sales manager for the New York Alco branch. Mr. Crooks has been identified with the industry for years. He was formerly associated with the Darracq Motor Co. and the Palmer-Singer Co.

Orillia, Can.—Harry Bill, formerly general manager of the Metzger Motor Car Co., of Detroit, has become general manager of the Tudhope Motor Car Co., of Orillia, which makes the Everitt car in Canada. He takes with him Joseph Gardham as factory manager.

Albany, N. Y.—E. Vincent Stratton has resigned as sales manager of the Packard agency at Albany to organize a sales service and supply station at that city for Everitt cars and Flanders electrics for eastern New York, western Vermont and western Massachusetts.

Calgary, Can.—Although the Ford Motor Agency, Limited, of Calgary, was established only in March, 1911, it already has outgrown its original quarters, and in order to take care of its rapidly increasing business has opened a large new garage at 129 Eleventh avenue east.

Lima, O.—The Lima branch of the Willys-Gramm Motor Truck Co., formerly of the Gramm plant, is to be enlarged in the near future. The plans for the addition and alterations have not yet been completed, but some definite announcement is expected within the next month.

Springfield, Mass.—M. E. A. Stoddard, one of the largest stockholders of the Stoddard Motor Car Co., has resigned as manager of the Springfield branch of T. G. Coombe & Co., member of the New York stock exchange, to give his entire time to the management of the motor agency.

Milford, Mass.—The International Trolley-Mobile Co., which was granted a franchise some months ago for a trolley line through the town, has not been heard from lately and the terms of the franchise has not been lived up to, so that it has expired. H. L. Milliken and Edwin L. Shavelle, of Boston, were behind the plan and an opportunity was offered the Milford people to purchase stock in the company. But little if any was sold in the town, so the promoters probably could not finance the deal.

Cincinnati, O.—The Peerless Motor Sales Co. is the style of a new concern formed here to distribute Peerless cars. Its location is at 2713-2717 Woodburn avenue.

Davenport, Ia.—August Leberman, formerly a partner in the Davenport Auto Co., has disposed of his interest in the business. The Davenport Auto Co. has lately become agent for the King.

Philadelphia, Pa.—The Philadelphia branch of the Mercer Automobile Co., 620-622 North Broad street, has been absorbed by the Whiting Motor Co., of New York, the local branch to have the agency for Pennsylvania, Delaware and Maryland.

Plymouth, Wis.—Torke Brothers are erecting a three-story building of fireproof construction, 50 by 120 feet in size, to be used for garage and machine shop purposes. It will cost $30,000 and will be one of the largest structures of its kind in Wisconsin outside of Milwaukee.

Ottawa, Can.—Another new firm is added to Ottawa's business circle, the Try Me Tire Co., at 266 Sparks street. This business was established through the enterprise of two Ottawans, F. B. Carling and Eric H. McLaughlin. The concern will handle United States tires.

Sheboygan, Wis.—Traugott Wilke has re-established his garage and machine shop in the Illig building. The former works are now occupied by the Sheboygan Machine Co., composed of former employes of the Falls Machine Co., of Sheboygan Falls, Wis.

Toledo, O.—A garage will be erected at the corner of Madison avenue and Eleventh street by Judge John H. Doyle and C. T. Lewis. The structure will be a two-story brick building and cost about $15,000. It will have a frontage of 50 feet on Eleventh street and 75 feet on Madison.

Cincinnati, O.—The Acme Motor Delivery Co. has been incorporated with a capital of $15,000 to operate a motor express business in this city and suburbs. The principals of the new company are W. E. Minor, F. L. Allen, S. P. Sutphin, Davis Wachmann and J, B. Minor.

Springfield, Mass.—One of the best garages in Springfield has just been completed for R. A. McKee on Worthington street, in the center of the motor district. It is two stories high, but the foundations are such that additional floors may be added from time to time.

Columbus, O.—Columbus is to have a new garage, to be located at the southwest corner of Third and Rich streets, in a large structure formerly used as stables for the Peruna company. H. A. Sells and J. R. Clancy have taken a long-time lease on the property, and the work of remodeling into an up-to-date garage is being pushed rapidly. The concern will be known as the Capitol Garage and Storage

Co. It is expected to operate a taxicab business also.

Toronto, Can.—Bowveur & Son, of this city, is representing in this territory the Havers Motor Car Co.

San Francisco, Cal.—The R. C. H. Corporation, through its western sales manager, A. E. Morrison, has opened a branch and service station in San Francisco.

Rochester, N. Y.—Oswald V. Hughes has become superintendent of the gasoline pleasure vehicle department of the Empire State General Vehicle Co., Circle street. Mr. Hughes will also be sales manager of the Locomobile car, which local agency the Empire State concern recently secured.

Kansas City, Mo.—The Indiana Garage and Sales Co., located at 3316 East Fifteenth street, Kansas City, has closed a contract with the Lincoln Motor Car Works, of Chicago, whereby it becomes distributing agent for Kansas City and vicinity for the Lincoln light delivery wagons.

St. Paul, Minn.—The northwestern branch of the Republic Tire Co., St. Paul, F. W. Osmun, manager, has moved to a new building at 167-169 West Sixth street. The show room is 25 by 100 feet. It has a heated driveway for winter use. In the basement is 5,250 square feet of storage space.

San Francisco, Cal.—The Henderson car has entered the San Francisco field, the agency being taken by Edward Bonnheim and Harry Moore, under the title of the Bonnheim-Moore Motor Car Co. It will cover a large territory, including northern California, southern Oregon and Nevada.

Boston, Mass.—Work has started on the new building for the United States Tire Co., at the junction of Beacon street and Commonwealth avenue, Boston, and the foundation will be finished shortly. It is expected that the new structure will be ready for occupancy by January 1, when the branch on Boylston street will be vacated. The present building is being offered for sub-lease or for sale following that time.

Ottawa, Can.—The Ottawa-Maxwell Sales Co. has changed its firm name to International Motor Co.

Toronto, Can.—A garage costing $10,000 is being built by the Union Life Insurance Co. on Roncesvalles street.

Davenport, Ia.—Meinert & Rogers, 317-19 East Second street, will handle a taxi and repair business. E. C. Meinert and W. E. Rogers are the members of the firm.

St. Paul, Minn.—L. H. Rose, for 5 years manager of the northwest branches of the Studebaker Corporation, has resigned that position to become head of the northwest agency of the Metzger Motor Car Co.

Waukesha, Wis.—The Milwaukee Hardware Mfg. Co. has established a brass foundry in the buildings at St. Paul avenue and State street and will make a specialty of castings for motor cars, cycles and other machinery. The company is managed by L. A. Ashley and Charles H. Foss, of Milwaukee.

Zanesville, O.—Plans have been prepared for a large addition to the sales agency and garage of the Wedge company, at Sixth and Marietta streets. The addition is made necessary because of the large increase in the business of the concern. The addition will be of brick, 105 by 50 feet, and two stories high.

Minneapolis, Minn.—The F. E. Murphy Automobile Co., handling the Mitchell and the Flanders electric, has had plans drawn for a building 100 by 137 feet, at Thirteenth street and Hennepin avenue. It will be of brick and reinforced concrete, two or three stories, with foundations for six. The building will cost $60,000.

Boston, Mass.—The alterations by which two large salesrooms on Boylston street, next to the Massachusetts Automobile Club, are being made into one large room for the J. W. Maguire Co., agent for the Pierce-Arrow cars and trucks, are completed, and as a result the company now has the largest salesrooms on Boston's famous motor row, it is claimed. All the posts have been removed, making it one large room much like a big hall.

Dallas, Tex.—The R. C. H. Corporation has opened a branch with W. E. Talbot in charge.

Cincinnati, O.—The Progressive garage has opened at 3040 Reading road. Robert Bruns is the manager. The new company will handle the Pathfinder car exclusively.

Boston, Mass.—Joseph Gardham, well known in the middle west as a driver, has gone to Boston to take charge of the Boston service department of the J. S. Harrington Co., agent for the Everitt.

Buffalo, N. Y.—L. D. Smith has been appointed distributor for New York state of the O'Neil Tire Protector Co., which established this week its state office and service station at 1056 Main street.

Portland, Ore.—John E. Leslie has succeeded E. K. Allen as manager of the local branch of the Republic Tire Co. Mr. Allen goes to Seattle to take charge of the Washington and British Columbia business of the Republic.

Indianapolis, Ind.—The Henderson Motor Car Co. has removed its offices from the tenth floor of the Hume-Mansur building, Indianapolis, to its factory building at Fourteenth and North West streets, where the business of all departments, manufacturing, sales and executive, will be handled.

Boston, Mass.—Manager Charles Addison Malley of the New England branch of the Universal truck, has leased the building at 193 Pleasant street, formerly occupied by the Grabowsky truck company, as a service station and salesrooms for the Universal. H. L. Winters has joined him as sales manager.

Detroit, Mich.—W. W. Sears, of the Sears Automobile Co., Des Moines, Ia., this week closed a contract with the R. C. H. Corporation for selling rights in Iowa territory. During the coming season the R. C. H. Corporation will be represented in Nebraska, western Iowa and South Dakota by the Lininger Implement Co., of Omaha.

Recent Incorporations

Boston, Mass.—Plymouth Garage and Machine Shop Co., capital stock, $10,000; incorporators, A. J. Smith, R. E. Kingan.

Buffalo, N. Y.—Mason B. Hatch, capital stock, $20,000; incorporators, M. B. Hatch, O. W. Hatch, J. M. Chipman.

Cleveland, O.—Ideal Motor Car Co., capital stock, $200,000; to manufacture motor cars; incorporators, C. G. Amendt, J. C. Reichert, D. M. Postelwaite, F. J. Shaffer, E. Bragunier.

Cleveland, O.—King Valveless Auto Whistle Co., capital stock, $25,000; to manufacture accessories; incorporators, D. Feffield, O. C. Snyder, G. H. Burrows, R. E. McMasters, C. J. Lowrie.

Camden, N. J.—Eidredge Co., capital stock, $75,000; to manufacture motor vehicles; incorporators, W. E. Eidredge, C. P. Sharpless, H. L. Adams.

Cincinnati, O.—Swing Wheel Automobile Co., capital, $15,000; to manufacture wheels; incorporators, A. J. Swing, Richard B. Warner, Rupert H. Langdale, C. A. Beckett and Richard A. Beckett.

Dayton, O.—Automatic Lamp Control Co., capital, $15,000; to manufacture lamp controls for motor cars; incorporators, Henry Ehlen, Ernest A. Eastman, William B. Meeker, Joseph Friedman and Mary E. Eastman.

Indianapolis, Ind.—Jenney Electric Starter Co., capital stock, $100,000; to manufacture starters; incorporators, C. D. Jenney, R. Wilson, W. L. Taylor.

Jackson, Mich.—Jackson Rim Co., capital stock, $100,000; to manufacture metal motor car rims; incorporators, O. W. Mott, W. Withington, M. Merriman.

Kansas City, Mo.—Palace Garage Co., capital stock, $5,000; incorporators, S. Sanders, G. Mass, I. Dick.

Memphis, Tenn.—Scott Motor Co., capital stock, $10,000; incorporators, J. C. Scott, W. H. Hayley, C. L. Sims, J. C. Sims.

New York—Fifty-second Street Auto Repair Co., capital stock, $2,000; incorporators, A. Williams, Jr., H. Matzinger, A. H. Darre.

New York—Resident Punctureless Tire Co., capital stock, $200,000; incorporators, F. M. McGready, S. H. Sheldon, Re Roy McGready.

New York—International Auto-Lamp Mfg. Co., capital stock, $300,000; incorporators, H. Agar, N. Agar, T. Gunningham.

New York—Essenkay Sales Co., capital stock, $100,000; to deal in motors; incorporators, H. S. Young, B. F. Abbott, W. C. Oliver.

New York—American Society of Automobile Owners; incorporators, R. S. Kennedy, J. C. Murray, A. Woods.

Queens, N. Y.—Far Rockaway Motor Cab Co., capital stock, $25,000; incorporators, E. Sommerich, J. L. Steinman, A. Behal.

Sewaren, N. J.—Perth Amboy Transportation Co., capital stock, $25,000; to operate motor cars for hire; incorporators, I. J. Freeman, L. Chester, I. Robbins.

Salem, Mass.—Motor Sales and Service Co., capital stock, $25,000; incorporators, G. B. Nason, E. S. Adams, G. P. Kinsman.

Toledo, O.—Rapp Mfg. Co., capital stock, $15,000; to manufacture spark plugs and motor car engine accessories; incorporators, S. W. Rapp, C. D. Stone, S. L. Thorburn, O. L. Hankison ,C. D. Few.

Westfield, N. J.—Darby Motor Car Co., capital stock, $25,000; to manufacture motor cars, etc.; incorporators, L. D. Darby, H. C. Darby, A. B. Darby.

PLEASURE CARS